Purchasing Office
P.O. Box 40197 • Lafayette, LA 70504-0197
Office: (337) 482-5396
Fax: (337) 482-5059

20223 SOLICITATION TABLE OF CONTENTS

HVAC AIR HANDLER REPLACEMENT – DUPRE LIBRARY

UNIVERSITY OF LOUISIANA AT LAFAYETTE

Lafayette, Louisiana

SOLICITATION FILE NO. 20223

TITLE: HVAC AIR HANDLER REPLACEMENT – DUPRE LIBRARY
BID SCHEDULE

Pre-bid meeting: Thursday, May 28, 2020 9:00AM
DUE DATE: Wednesday, June 17, 2020 2:00PM
BID OPENING: Thursday, June 18, 2020 11:00AM

PROPOSAL FOR FURNISHING ALL LABOR, MATERIALS, EQUIPMENT, TRANSPORTATION, SUPERVISION, PERMITS, ETC. NECESSARY FOR CONSTRUCTION FOR THE DUPRE LIBRARY – ROOM 146 - AIR HANDLING UNIT REPLACEMENT, LOCATED ON THE UL LAFAYETTE CAMPUS, LAFAYETTE, LOUISIANA.

BID DEADLINE

The Purchasing Office Bids at the University of Louisiana at Lafayette will receive proposals for this solicitation up to the above-mentioned date and time. Proposals will not be received after this specified hour and date. Bids will be publicly opened and read by a designated employee of the Purchasing Department.

This is a *Competitive Sealed Bid. See Guidelines for Electronic Submission of Bids and Virtual Bid Openings on page 4 of this solicitation, which contains complete details for submitting bids. Further information can be found in the attached* INSTRUCTIONS TO BIDDERS.

Bidders submitting bids in the amount of $10,000.00 or more SHALL show their license number on the front of the sealed envelope in which their bid is enclosed; bids not submitted in accordance with this requirement, SHALL be rejected and shall not be read.

Bid must be received by the due date and time in the Purchasing Office as per the instructions outlined in this solicitation. Bid is to be submitted with the BID NUMBER and DUE DATE ON THE OUTSIDE OF THE ENVELOPE or IN THE SUBJECT LINE of the electronic submission. The public bid opening will take place on Wednesday, June 10, 2020 at 9:00AM on Zoom, which is available for viewing by registering at **https://zoom.us/meeting/register/tJIpc-2orj0uEtE9h-IfoNBN92Xj5QIF-kbj**.

All inquiries regarding this request shall be directed to the Director of Purchasing at (337) 482-5396 or purchasing@louisiana.edu.

Attached is the completed proposal of the firm listed below. The undersigned certifies that he/she (or they) has/have carefully examined *the Instructions to Bidders, the General Conditions, and the Specifications* hereto attached and made part herein, and agrees to comply with the instructions, conditions, and specifications, as covered by the attached papers. On the basis of the specifications, the undersigned proposes to furnish any or all items listed in the schedule of items hereto attached, upon which prices are requested, and at the price stated for each item.

Firm Name	Signature [By signing this bid, bidder certifies compliance with La. R.S. 38:2212(A)(1)(c) or RS 38:2212(0)]
Address	Name (Printed)
City, State, Zip Code	Title
Telephone No. including area code	Date
Fax No. including area code	E-Mail

FURNISH ALL LABOR, MATERIALS, EQUIPMENT, TRANSPORTATION, SUPERVISION, PERMITS, ETC. NECESSARY FOR CONSTRUCTION FOR THE DUPRE LIBRARY – ROOM 146 - AIR HANDLING UNIT REPLACEMENT, LOCATED ON THE UL LAFAYETTE CAMPUS, LAFAYETTE, LOUISIANA, AS SHOWN ON THESE SPECIFICATIONS...

SCOPE OF WORK

1. Removal of existing Air Handling Units and associated piping, electrical, controls, etc..
2. Modify existing HVAC Chilled and Hot Water Piping.
3. Modify existing supply and return ductwork.
4. Installation of new Air Handling Units.
5. Modifications to existing electrical service to Air Handling Units.
6. Modifications to existing EMS Controls to accommodate installation of new AHU's.
7. Testing, Adjusting, and Balancing of AHU's by Zones.
8. Alternate No. 1: Cleaning and coating existing Supply Ductwork and Grilles in work area.
9. Alternate No. 2: Cleaning and coating existing Return Ductwork and Grilles in work area.
10. Alternate No. 2: Additional Testing, Adjusting, and Balancing of all grilles in work area.

COMPLIANCE TO SCHEDULE/LIQUIDATED DAMAGES

ALL WORK SHALL BE PERFORMED OVER THE SEMESTER BREAK BEGINNING SATURDAY DECEMBER 12, 2020 AND COMPLETED BY TUESDAY JANUARY 12, 2021.

DUE TO THE IMPORTANCE OF THE SCHEDULE, LIQUIDATED DAMAGES IN THE AMOUNT OF ONE HUNDRED DOLLARS ($100.00) PER DAY WILL BE ASSESSED FOR EVERY CALENDAR DAY THAT THIS PROJECT IS NOT COMPLETE BY THE DESIGNATED COMPLETION TIME.

BID SECURITY REQUIREMENTS

Each bidder MUST accompany his/her proposal with a bid security for five percent (5%) of the total maximum amount of his/her bid. The bid security shall be drawn in favor of the University of Louisiana at Lafayette and SHALL be in the form of a Bid Bond (Insurance Company), Bank Money Order, Certified Check or Cashier's Check. It shall become the property of the Owner in the event the contract and any performance bond are not executed within the time set forth. Bid bond shall be written by a surety or insurance company currently on the US Department of the Treasury Financial Management Service List of Approved Bonding Companies which is published annually in the Federal Register, or by a Louisiana domiciled insurance company with at least an "A-" Rating in the latest printing of the AM Best's Key Rating Guide to write individual bonds up to ten percent (10%) of policyholders' surplus as shown in the AM Best's Key Rating Guide.

Successful bidder WILL BE required to execute and deliver within ten (10) days of notification, a satisfactory performance bond and payment bond in the amount of one hundred percent (100%) of the contract price. Performance Bond, with Power of Attorney, shall be secured by a surety or insurance company currently on the US Department of the Treasury Financial Management Service List of Approved Bonding Companies, and in accordance with restrictions set by them or by an insurance company that is either domiciled in Louisiana or owned by Louisiana residents and is licensed to write surety bonds. In addition, any surety bond written for a public works Project shall be written by a surety or insurance company that is currently licensed to do business in the State of Louisiana. Also, to be provided at the same time is a Labor and Materials payment Bond in an amount equal to one hundred percent (100%) of the contract amount.

LOUISIANA CONTRACTORS LICENSE REQUIREMENTS

Contractors or contracting firms submitting bids in the amount of $10,000.00 or more shall certify that they are licensed contractors under Chapter 24 of Title 37 of the Louisiana Revised Statutes 1950 and show their license number on the front of the sealed envelope in which their bid is enclosed. Bids shall be accepted from Contractors who are licensed under L.A. R.S. 37:2150-2163 in the following classification: MECHANICAL WORK. Bids in the amount of $10,000.00 or more, not submitted in accordance with this requirement, shall be rejected and shall not be read. Additional information relative to licensing may be obtained from the Louisiana State Licensing Board for Contractors, Baton Rouge, Louisiana.

In accordance with La. R.S. 38:2227, LA. R.S. 38:2212.10 and LA. R.S. 23:1726(B) each bidder on this Project must submit a completed Attestations Affidavit (Past Criminal Convictions of Bidders, Verification of Employees and Certification Regarding Unpaid Workers Compensation Insurance) form found within this bid package. The Attestations Affidavit form shall be submitted to the Purchasing Department within 10 days **after** the opening of bids. **Affidavits submitted with the Bid Documents, prior to the opening of bids, will not be accepted in accordance with stated Revised Statute.**

PROHIBITION OF DISCRIMINATORY BOYCOTTS OF ISRAEL

In accordance with LA R.S. 39:1602:1, for any contract for $100,000 or more and for any contractor with five or more employees, Contractor, or any Subcontractor, shall certify it is not engaging in a boycott of Israel, and shall, for the duration of this contract, refrain from a boycott of Israel.

The State reserves the right to terminate this contract if the Contractor, or any Subcontractor, engages in a boycott of Israel during the term of the contract.

BUSINESS HOURS

Delivery of any document(s) will NOT be accepted during non-business hours. Business hours are Monday through Thursday, 7:30 am to 11:45 am, 12:30 pm to 5:00 pm, and Friday, 7:30 am to 12:30 pm. The Purchasing Office will be closed during Federal, State and University holidays. It is the responsibility of the prospective bidder to be aware of such closures.

Please note that courier services such as UPS, FedEx, and DHL will be UNABLE to deliver to our physical location, as the building may be locked and unstaffed. *See Guidelines for Electronic Submission of Bids and Virtual Bid Openings on page 4 of this solicitation for more detailed information.*

In providing this bid, each bidder represents that: They have read and understand the bid documents and the bid is made in accordance herewith, and the bid is based upon the specifications described in the bid documents without exception.

SITE VISIT/CONTACT INFORMATION

It is the responsibility of the prospective bidder to visit and examine jobsite, take measurements to his/her own satisfaction and determine conditions under which work is to be done. Owner will not accept responsibility for conditions which careful examination of premises would have shown existed.

To visit jobsite and for further information, prospective bidder is to contact Terry L. Jenkins, 337-482-2001.

PRE-BID MEETING INFORMATION

A pre-bid meeting will be held at **9:00AM, Thursday, May 28, 2020** at Facility Management Department, Parker Hall, 310 E. Lewis Street, Lafayette, Louisiana, at which time details of plans and specifications will be discussed.

TAX RELATED INFORMATION

It is the responsibility of the prospective bidder to pay taxes on materials purchased for this project. The University of Louisiana at Lafayette is a tax exempt State Agency. However, that tax exempt status does not transfer to its contractors, subcontractors, suppliers, or vendors for their use.

For further information, prospective bidder is to contact the Purchasing Department at purchasing@lousiana.edu, or call Roxanne Formeller at 337-482-2955.

Guidelines for Electronic Submission of Bids and Virtual Bid Openings

In keeping with the physical distancing guidelines associated with COVID-19 Public Health Emergency declared by Governor John Bel Edwards in Proclamation Numbers 41, 33, 32, 30, 27, and 25 JBE 2020, the Purchasing Department at the University of Louisiana at Lafayette is suspending in-person attendance at public bid openings. All tasks associated with sealed bids and corresponding bid openings will be completed electronically to the greatest extent possible.

BID SUBMISSIONS

This information applies to competitive sealed bids. Bidders shall submit proposals by employing one of the following methods:

A. ***Electronic submittal:*** Bidders selecting the electronic submittal method must submit an electronic bid containing the mandatory information detailed in the bid specifications. The bid must be received at ULLafayetteBids@louisiana.edu on or before the date and time specified. Bidders e-mailing their bids should allow sufficient time to ensure receipt of their proposal by the time specified. The timestamp recorded in the email acknowledgement shall be the official time of submission.

The electronic submittal must contain the Subject Line:
File No. _____ Bid Submission – [Bidder/Company Name/LA Contractor's License No.]

If the file size of the email submission exceeds server requirements, the email submission may be broken into smaller emails with "Part 1 of ___" included at the end of each original Subject Line (e.g. File No. _____ Bid Submission – [Bidder/Company Name/LA Contractor's License No.] – Part 1 of 3).

The University assumes no responsibility for assuring accurate/complete e-mail transmission and receipt. The responsibility solely lies with each bidder to ensure their submission is received at the specified email address prior to the deadline. Proposals received after the deadline, corrupted files, and incomplete submissions (e.g. Part 1 and Part 2 of 3 are received, but Part 3 is not) will not be considered.

Bids advertised on LAPAC will show a solicitation file number formatted like 50011-ULLAF#####. It is only necessary to include the last five (5) digits of that number in the Subject Line.

Bids shall be submitted in searchable .pdf format.

Faxed submittals shall not be accepted.

Bid Submissions for Public Works

In addition to the above, the following applies to Title 38 Public Works electronic bid submittals.

The bidder must sign electronically or submit a scanned signature on the Louisiana Uniform Public Works Bid Form.

As stated on the Louisiana Uniform Public Works Bid Form, a corporate resolution or written evidence of the authority of the person signing the bid for the public work as prescribed by LA R.S. 38:2212(B)(5) shall be enclosed.

Bid submittal shall include security equal to 5% of bid. Cashier's checks shall not be accepted as bid security when submitting bids electronically.

Louisiana Contractor's License Number shall be in the subject line of the bid for ALL bids greater than or equal to $10,000.00.

Bids for Electrical/Mechanical Work greater than or equal to $10.000.00 shall disclose the Louisiana Contractor's License Number in the Subject Line.

Asbestos Abatement bids exceeding $1.00 shall disclose the Louisiana Contractor's License Number in the Subject Line.

B. ***USPS Mail submittal:*** This information applies to competitive sealed bids. The responsibility lies solely with the Bidder to allow enough mail time to ensure their bid is received at the address specified by the deadline. Mail to:

University of Louisiana at Lafayette
Purchasing Office
PO Box 40197
Lafayette, LA 70504-0197

Bidders may elect to submit bids by USPS mail if, among other reasons, providing samples or if using cashier's checks as bid security.

During the COVID-19 Emergency period and for the foreseeable future, the University's Post Office is open with limited hours, Tuesdays and Thursdays 7:30AM to 2:00PM.

Please note that courier services such as UPS, FedEx, and DHL will be UNABLE to deliver to our physical location, as the building may be locked and unstaffed.

The deadline for receipt of bids shall be listed in each Invitation to Bid (ITB), and mail is collected from the UL Lafayette Post Office mailbox at that time.

The bid shall be submitted in a sealed envelope/package with the Solicitation File No. on the outside of the SEALED envelope/package. To ensure the integrity of the bid process, when submitting a bid by mail, do not use the envelope provided by the USPS as your sealed envelope. Instead, place your own properly labeled sealed envelope inside the envelope used for mailing the sealed bid.

Bids advertised on the LAPAC website will show a solicitation file number formatted like 50011-ULLAF#####. It is only necessary to include the last five (5) digits of that number on the outside of the envelope.

Bid Submissions for Public Works
In addition to the above, the following applies to mail-in Title 38 Public Works bid submissions.

The bid submission must include an original signature on the Louisiana Uniform Public Works Bid Form.
As stated on the Louisiana Uniform Public Works Bid Form a corporate resolution or written evidence of the authority of the person signing the bid for the public work as prescribed by LA R.S. 38:2212(B)(5) shall be enclosed.

Bid shall include security equal to 5% of bid.

Louisiana Contractor's License Number shall be on the outside of the sealed envelope of the bid for ALL bids greater than or equal to $10,000.00.

Electrical/Mechanical Work greater than or equal to $10.000.00 shall disclose the Louisiana Contractor's License Number on the outside of the envelope.

Asbestos Abatement bids greater than $1.00 shall disclose the Louisiana Contractor's License Number on the outside of the envelope.

BID OPENING

Bid openings will continue to be open to the public, conducted virtually using Zoom. To ensure an accurate list of attendees, parties interested in viewing the opening must register for the meeting.

The link to register for each bid opening shall be provided with the Invitation to Bid.

The link will be live at that time and will provide live audio and video access to the bid opening.

The Bid Opening Zoom meeting shall begin at the top of the hour listed in the specifications as the Bid Opening time. The actual opening of bids shall begin at ten (10) past the hour to allow all attendees to log in and sign in properly. The public bid opening for this solicitation will take place on Wednesday, June 10, 2020 at 9:00AM on Zoom, which is available for viewing by registering at https://zoom.us/meeting/register/tJIpc-2orj0uEtE9h-IfoNBN92Xj5QlF-kbj.

Requests for bid tabulations and solicitation inquiries should be directed to purchasing@louisiana.edu as listed in the solicitation/ITB.

VENDOR CHECK LIST

REQUIRED FORMS/ITEMS UPON BID SUBMISSION

_____ Louisiana Uniform Public Works Bid Form
_____ Bid Security Equal to 5% of Bid
_____ Louisiana Contractor's License Number (If Applicable) on Envelope Exterior or in Subject Line of email

REQUIRED FORMS AFTER BID OPENING/UPON BID AWARD

_____ Attestation Affidavit (ALL BIDDERS, WITHIN 10 DAYS OF BID OPENING)
_____ Non-Collusion Affidavit (LOW BIDDER, WITHIN 10 DAYS OF REQUEST)
_____ Disclosure of Ownership Affidavit (LOW BIDDER, WITHIN 10 DAYS OF REQUEST)
_____ Performance and Payment Bond (LOW BIDDER, WITHIN 10 DAYS OF REQUEST)
_____ Certificate of Insurance (*Insurance requirements revised February 2019*)
_____ Certificate of Recordation of Contract and Bonds
_____ Clear Lien Certificate

DETAILED SPECIFICATIONS

Base Bid

SCOPE OF WORK

1. Removal of existing Air Handling Units and associated piping, electrical, controls, etc..
2. Modify existing HVAC Chilled and Hot Water Piping.
3. Modify existing supply and return ductwork.
4. Installation of new Air Handling Units.
5. Modifications to existing electrical service to Air Handling Units.
6. Modifications to existing EMS Controls to accommodate installation of new AHU's.
7. Testing, Adjusting, and Balancing of AHU's by Zones.
8. Alternate No. 1: Cleaning and coating existing Supply Ductwork and Grilles in work area.
9. Alternate No. 2: Cleaning and coating existing Return Ductwork and Grilles in work area.
10. Alternate No. 2: Additional Testing, Adjusting, and Balancing of all grilles in work area.

MECHANICAL SPECIFICATIONS

MECHANICAL GENERAL PROVISIONS

GENERAL:
The General Conditions of the Specifications, along with the supplementary conditions, special conditions, information to bidders, and any other pertinent information and documents shall apply the same as if repeated herein.

SCOPE OF WORK:
Furnish all labor and material necessary to provide and install the complete mechanical portion of this Contract, including heating systems as called for herein and on accompanying drawings. Parts of the mechanical division may be bid separately or in combination, at the Contractor's option; however, it shall be the responsibility of the Prime Contractor to assure himself that all items covered in the Mechanical Division have been included if he chooses to accept separate bids.

This Contractor shall refer to the drawings and install equipment, piping, etc. to meet building and space requirements. No equipment shall be bid on or submitted for approval if it will not fit in the space provided.

It is the intention of these Specifications that all mechanical systems shall be furnished complete with all necessary valves, controls, insulation, piping, devices, equipment, etc. necessary to provide a satisfactory installation in working order.

Contractor shall visit the site and acquaint himself thoroughly with all existing facilities and conditions which would affect his portion of the work. Failure to do so shall not relieve the Contractor from the responsibility of installing his work to meet the conditions.

This Contractor shall protect the entire system and all parts thereof from injury throughout the project and up to acceptance of the work. Failure to do so shall be sufficient cause for the Owner to reject any piece of equipment.

DEMOLITION:
The contractor shall visit the site prior to bid to determine the extent of work required to complete the project.

Contractor shall coordinate demolition with owner. Locate salvaged equipment as directed by owner. All equipment and materials not salvaged by the owner shall be removed from the site and discarded at the contractor's expense.

Contractor shall coordinate all work with general contractor and phase work as required by project.

All equipment piping, etc. required to be removed to accommodate the modifications shall be removed.

Contractor shall maintain services to existing facilities which shall remain during and after construction is complete.

Contractor shall coordinate any shutdown of services with the owner. It is intended that the building will remain occupied during construction. Contractor shall schedule shut down of services with the owner in order to prevent disruption of

building occupancy.

Contractor shall be responsible for draining down of existing systems to complete demolition. All work shall be scheduled with the owner. Contractor shall also be responsible for refilling system and removing all air in order to return the systems to proper operating conditions.

All shutdown of services shall be done at a time period approved by the owner. The systems shall be required to be back up and running each morning unless otherwise approved by the owner.

CUTTING AND PATCHING:
Initial cutting and patching shall be the responsibility of the Contractor, with the Mechanical Contractor being responsible for laying out and marking any and all holes required for the reception of his work. No structural beams or joists shall be cut or thimbled without first receiving the approval of the Owner. After initial surfacing has been done, any further cutting, patching and painting shall be done at this Contractor's expense.

FILL AND CHARGES FOR EQUIPMENT:
Fill and charge with materials or chemicals all those devices or equipment as required to comply with the manufacturer's guarantee or as required for proper operation of the equipment.

WELDING:
Weld piping in accordance with qualified procedures using performance qualified welders and welding operators. Qualified procedures and welders in accordance with ASME Section IX. Welding procedures qualified by others and welders and welding operators qualified by another employer may be accepted as permitted by ANSI B31.1. Notify the Owner 24 hours in advance of tests, and perform the tests at the work site if practicable. Furnish Owner with a copy of qualified procedures and a list of names and identification symbols of qualified welders and welding operators. Apply welders or welding operators assigned symbols near each weld they make as permanent record.

CLEANING AND ADJUSTING:
Upon completion of his work, the Contractor shall clean and adjust all equipment, controls, valves, etc.; clean all piping, ductwork, etc.; and leave the entire installation in good working order.

OPERATING AND MAINTENANCE INSTRUCTIONS:
Provide services of authorized representatives of the manufacturer to ensure that the equipment is installed according to the manufacturer’s recommendations and is operating properly and to instruct the owner’s operating personnel during start-up and operating tests of complete mechanical systems. Prove proper operation of equipment to the Owner. Notify the Owner seven (7) days prior to beginning equipment start-up.

Certify in writing that these services have been performed.

Provide the Owner with three (3) copies of printed instructions indicating various pieces of equipment by name and model number, complete with parts lists, maintenance and repair instructions and test and balance report.

COPIES OF SHOP DRAWINGS WILL NOT BE ACCEPTABLE AS OPERATION AND MAINTENANCE INSTRUCTIONS BUT MUST BE INCLUDED IN SUBMITTAL PACKAGE.

All inspection test certificates such as piping inspections, and H.V.A.C equipment start-up, shall be copied and included as part of the operation and maintenance instructions and close out documents.

This information shall be bound in plastic hardbound notebooks with the job name permanently embossed on the cover. Rigid board dividers with labeled tabs shall be provided for different pieces of equipment. Submit manuals to the Owner for approval.

In addition to the operation and maintenance brochure, the Contractor shall provide a separate brochure which shall include registered warranty certificates on all equipment, especially any pieces of equipment which carry warranties exceeding one (1) year.

The operation and maintenance brochure shall be furnished with a detailed list of all equipment furnished to the project, including the serial number and all pertinent nameplate data such as voltage, amperage draw, recommended fuse size, rpm, etc. The Contractor shall include this data on each piece of equipment furnished under this contract.

SERVICE:
Inspect, clean and service air filters immediately prior to final acceptance of project.

Provide lubrication for operation of equipment until final acceptance of the equipment by the Owner. Protect bearings during installation and thoroughly grease steel shafts to prevent corrosion. Provide extended lubrication lines for parts requiring lubrication which are concealed or inaccessible.

Contractor shall drain down HVAC Chilled and Hot Water Piping as required to incorporate modifications to the existing systems.
Properly refill piping and remove all air from Piping Systems and Air Handling Units.
Provide proper air vents and service valves as required to properly phase the installation of piping for the project.

Contractor shall minimize down time of existing HVAC equipment such that occupancy of the building will not be interrupted.
Coordinate shutdown of any HVAC systems with the owner prior taking any equipment off line.

Place mechanical systems in complete working order and clean and polish fixtures, equipment and materials thoroughly returning to "as new" condition prior to request for final review.

Remove excess material and debris. Clean out lines and fittings and adjust valves. Broom clean areas. Thoroughly clean ductwork inside and outside before connecting to AHU's.

GUARANTEE:
The Contractor shall guarantee all materials, equipment and workmanship for a period of one (1) year from the date of final acceptance of the project. This guarantee shall include furnishing of all labor and material necessary to make any repairs, adjustments or replacement of any equipment, parts, etc. necessary to restore the project to first class condition. During this period, make good faults or imperfections that may arise due to defects or omissions in materials or workmanship with no additional compensation and as directed by the Owner. This guarantee shall exclude only the changing or cleaning of filters. Warranties exceeding one (1) year are hereinafter specified with individual pieces of equipment.

If the Contractor's office is in excess of a fifty (50) mile radius of the project, he shall appoint a local qualified contractor to perform any emergency repairs or adjustments required during the guarantee period. The name of the contractor appointed to provide emergency services shall be submitted to the Architect for his and/or Owners approval.

LOCAL CONDITIONS:
The location and elevation of all utility services is based on available plans and are reasonably accurate; however, these shall serve as a general guide only, and the Contractor shall visit the site and verify the location and elevation of all services to his satisfaction in order to determine the amount of work required for the execution of the Contract.

In case major changes are required, this fact, together with the reasons therefor, shall be submitted to the Architect, in writing, not less than seven (7) days before the date of bidding. Failure to comply with this requirement will make the Contractor liable for any changes, additions and expenses necessary for the successful completion of the project.

PERMITS, INSPECTIONS AND TESTS:
All permits, fees, etc. for the installation, inspections, plan review, service connections locations, and/or construction of the work which are required by any authority and/or agencies having jurisdiction, shall be obtained and paid for by the Contractor. This shall be verified during the bidding process. "A CHANGE ORDER WILL NOT BE GRANTED FOR LACK OF ANY INFORMATION OR INVESTIGATION.

The Contractor shall make all tests required by the Owner or other governing authorities at no additional cost to the Owner.

The Contractor shall notify the Owner and local governing authorities before any tests are made, and the tests are not to be drawn off a line covered or insulated until examined and approved by the authorities. In event defects are found, these shall be corrected and the work shall be retested.

Prior to requesting final inspection by the Owner, the Contractor shall have a complete coordination and adjustment meeting of all of his sub-contractors directly responsible for the operation of any portion of the system. At the time of this meeting, each and every sequence of operation shall be checked to assure proper operation. Notify the Owner in writing ten (10) days prior to this meeting, instructing him of the time, date and whom you are requesting to be present.

This project shall not be accepted until the above provisions are met to the satisfaction of the Owner.

CODES AND STANDARDS:

The entire mechanical work shall comply with the rules and regulations of the City, Parish, County and State in which this project is being constructed, including the State Fire Marshal, Office of Public Health, Local Health Unit, OSHA, ANSI. All modifications required by these authorities shall be made without additional charge to the Owners. The Mechanical Contractor shall report these changes to the Owner and secure his approval before work is started.

In addition to the codes heretofore mentioned, all mechanical work and equipment shall conform to the applicable portions of the following specifications, codes and/or regulations:

1. American Society of Heating, Refrigeration and Air Conditioning Engineers (ASHRAE)
2. National Electrical Code (NEC)
3. National Fire Protection Association (NFPA)
4. American Society of Mechanical Engineers (ASME)
5. American Gas Association (AGA)
6. Building Code (Latest local approved with local amendments)
7. Mechanical Code (Latest local approved with local amendments)
8. Fuel Gas Code (Latest local approved with local amendments)
9. Underwriters Laboratories (UL)
10. Louisiana State Plumbing Code (Latest local approved with local amendments)

All materials, equipment and accessories installed under this Contract shall conform to all rules, codes, etc. as recommended by National Associations governing the manufacturer, rating and testing of such materials, equipment and accessories. All materials shall be new and of the best quality and first class in every respect. Whenever directed by the Architect, the Contractor shall submit a sample for approval before proceeding.

Where laws or local regulations provide that certain accessories such as gauges, thermometers, relief valves and parts be installed on equipment, it shall be understood that such equipment be furnished complete with the necessary accessories, whether or not called for in these Specifications.

All unfired pressure vessels shall be built in accordance with the A.S.M.E. Code and so stamped. Furnish shop certificates for each vessel.

REVIEW OF MATERIALS:

Whenever manufacturers or trade names are mentioned in these Plans or Specifications, the words "or approved equivalent" shall be assumed to follow whether or not so stated. Manufacturers or trade names are used to establish a standard of quality only and should not be construed to infer a preference. Equivalent products which meet the Owner's approval will be accepted; however, these products must be submitted to the Owner a minimum of ten (10) days prior to the Bid Date.

Submission shall include the manufacturer's name, model number, rating table and construction features. Incomplete information which does not provide adequate information to verify compliance with specifications shall be grounds for rejection of submitted equipment or materials.

Upon receipt and checking of this submittal, the Owner will issue an addendum listing items which are approved as equivalent to those specified. THE CONTRACTOR SHALL BASE HIS BID SOLELY ON THOSE ITEMS SPECIFIED OR INCLUDED IN THE "PRIOR APPROVAL ADDENDUM", AS NO OTHER ITEM WILL BE ACCEPTABLE.

Prior approval of a particular piece of equipment does not mean automatic final acceptance and will not relieve the Contractor of the responsibility of assuring himself that this equipment is in complete accord with the Plans and Specifications and that it will fit into the space provided. Shop drawings must be submitted on all items of equipment for approval as hereinafter specified.

Before proceeding with work and/or within thirty (30) days after the award of the General Contract for this work, the Mechanical Contractor shall furnish to the Owner complete shop and working drawings of such apparatus, equipment, controls, insulation, etc. to be provided in this project. These drawings shall give dimensions, weights, mounting data, performance curves and other pertinent information.

The Owner's approval of shop drawings shall not relieve the Contractor from the responsibility of incorrectly figured dimensions or any other errors which may be contained in these drawings. Any omission from the shop drawings or specifications, even though approved by the Owner, shall not relieve the Contractor from furnishing and erecting same.

Ten (10) sets of shop drawings shall be submitted to the Owner for approval. These submittals shall be supplied as part of this Contractor's contract. Any drawings not approved shall be resubmitted until they are approved. SUBMIT ALL SHOP DRAWINGS AT THE SAME TIME. NO SEPARATE ITEMS WILL BE ACCEPTED.

MINOR DEVIATIONS:

Plans and detail sketches are submitted to limit, explain and define conditions, specified requirements, pipe sizes and manner of erecting work. Structural or other conditions may require certain modifications from the manner of installation shown, and such deviations are permissible and shall be submitted for approval prior to any acceptance. Specified sizes and requirements necessary for satisfactory operation shall remain unchanged. It may be necessary to shift pipes, and these changes shall be made as required. All such changes shall be referred to the Owner for approval before proceeding. Extra charges shall not be allowed for these changes. The contractor shall obtain a full set of plans and specifications for the coordination of his work prior to bidding this project. Items which are unclear to the bidding contractor shall be brought to the Owner's attention prior to bidding the project. An interpretation shall be clarified by the Owner prior to bidding.

The Contractor shall realize that the drawings could delve into every step, sequence or operation necessary for the completion of the project, without drawing on the Contractor's experience or ingenuity. However, only typical details are shown on the Plans. In cases where the Contractor is not certain about the method of installation of his work, he shall ask for details. Lack of details will not be an excuse for improper installation.

In general, the drawings are diagrammatic and the Contractor shall install his work in a manner so that interferences between the various trades are avoided. In cases where interferences do occur, the Owner is to state which item was first installed.

AS-BUILT DRAWINGS:

The Contractor shall obtain at his cost, two sets of blackline prints of the original bid documents by the Owner. One set shall be kept on the site with all information as referenced below, and shall update same as the work progresses. The other set will be utilized to record all field changes to a permanent record copy for the Owner.

If the Contractor elects to vary from the Contract Documents and secures prior approval from the Owner for any phase of the work, he shall record in a neat and readable manner, ALL such variances on the blackline print in red. The original blue lines shall be returned to the Owner for documentation.

All deviations from sizes, locations, and from all other features of the installations shown in the Contract Documents shall be recorded.

In addition, it shall be possible using these drawings to correctly and easily locate, identify and establish sizes of all piping, directions and the like, as well as other features of the work which will be concealed underground and/or in the finished building.

For work concealed in the building, sufficient information shall be given so it can be located with reasonable accuracy and ease. In some cases this may be by dimension. In others, it may be sufficient to illustrate the work on the drawings in relation to the spaces in the building near which it was actually installed. The Owner's decision in this matter will be final. The following requirements apply to all "As-Built" drawings:

(1) They shall be maintained at the Contractor's expense.

(2) All such drawings shall be done carefully and neatly, and in a form approved by the Owner.

(3) Additional drawings shall be provided as necessary for clarifications.

(4) These drawings shall be kept up-to-date during the entire course of the work and shall be available upon request for examination by the Owner; and when necessary, to establish clearances for other parts of the work.

(5) "As-built" drawings shall be returned to the Owner upon completion of the work and are subject to approval of the Owner.

MANUFACTURER'S DIRECTION:
The mechanical contractor shall install and operate all equipment and materials in strict accordance with the manufacturer's installation and operating instructions. The manufacturer's instructions shall become part of the Contract Documents and shall supplement the Drawings and Specifications.

Store equipment in a clean, dry place protected from other construction. While stored, maintain factory wrapping or tightly cover and protect equipment against dirt, water, construction debris, chemical, physical or weather damage, traffic and theft.

LABELING MECHANICAL EQUIPMENT:
All mechanical equipment (AHU's, VFD's, Control Panels, Thermostats (Space Sensors), etc.) furnished shall be labeled with permanent laminated plate secured to equipment. Units shall be labeled as indicated on plans and schedules and with commissioning addresses used by the manufacturer. Submit equipment labels for approval.

BASIC MATERIALS AND METHODS

PIPE:

CONDENSATE DRAIN LINES:
All such lines shall be Government Type "L", hard copper water tubing of standard weight and thickness as made by Mueller, Chase, Anaconda or equivalent, unless indicated otherwise. Use lead free solder on all piping above slab. Braze all piping beneath the slab.

CHILLED WATER HEATING PIPING:
Shall be American made standard black steel, schedule 40 pipe and fittings . Fittings two inches and below shall be malleable screw fittings. Piping above two inches shall be electrically welded utilizing welded fittings. All elbows shall be long radius type. Piping shall be insulated as per insulation section. Submit piping as specified.

All new piping, valves, elbows, welded connections, and fittings shall be coated with two (2) coats of rust inhibiting primer

prior to applying insulation.

HOT WATER HEATING PIPING:
Shall be American made standard black steel, schedule 40 pipe and fittings . Fittings two inches and below shall be malleable screw fittings. Piping above two inches shall be electrically welded utilizing welded fittings. All elbows shall be long radius type. Piping shall be insulated as per insulation section. Submit piping as specified.

All new piping, valves, elbows, welded connections, and fittings shall be coated with two (2) coats of rust inhibiting primer prior to applying insulation.

INSTALLATION OF PIPING:
All pipe shall be true and straight, without sags or traps.

The Contractor shall exercise care in cleaning joints after making cuts on pipe to prevent pipe particles from entering the system.

All pipe fittings shall be same as piping specified unless indicated otherwise.

Arrange, install piping approximately as indicated, straight, plumb and as direct as possible; form right angles, or parallel lines with building walls. The most practical appearance of piping runs is required. Keep pipes close to walls, partitions, ceilings; off-set only where necessary to follow walls as directed.

Before installing piping, check existing plumbing in the area, existing HVAC equipment, existing ductwork, etc. with mechanical and electrical drawings; make accurate layout of HVAC piping. Where interferences may appear and departures from indicated arrangements are required, consult with other trades involved; come to agreement as to changed locations and elevations of piping; obtain approval of proposed changes. Note runs of other contractor's piping and large conduits and cooperate to achieve neat appearance.

Unless otherwise indicated, conceal all piping in building construction in finished areas. Install such piping in time so as not to cause delay to work of other trades and to allow ample time for tests and approval; do not cover before approval is obtained.

Locate groups of pipes parallel to each other and building lines; space them at distance to permit access for servicing, valves, and to create most practical appearance when racked with conduits, refrigerant, etc., provided by other contractors.

Rigidly support pipes to make firm, well-braced installation. Loosely supported pipe or accessory is not acceptable.

Install horizontal piping to coordinate with other trades and install without sags or humps.

Grade piping as specified under heading or service where used, or as directed.

Keep piping free from scale and dirt, protect open pipe ends wherever work is suspended during construction. To prevent foreign bodies entering and lodging in pipe, use temporary plugs or other approved material.

Where changes in pipe sizes occur, do not bush down; use only reducing fittings. For drainage piping changes in direction, use long sweep bends where possible; otherwise, short sweep 1/4 bends or combination Y and 1/8 bends; also Y's in combination with other bends.

Provide shut off valves at all supply connections to all equipment. Supplier of equipment shall provide rough-in drawings and this contractor shall fully connect all items, supply necessary piping and fittings as required, unless otherwise noted individually.

Do not locate valves with stems below horizontal.

Locate valves for easy access and operations. Where concealed, notify General Contractor if exact location in order that he may leave openings for access panels. Provide access panels.

Provide unions, screwed or flanged, where indicated, and in following locations even if not indicated.

1. In connection to equipment requiring disconnection for repairs or replacement. Locate between shut-off and equipment.

2. In by-passes around equipment.

Weld-O-let fittings shall be used in iron pipe.

All screwed fittings and pipe shall have threads cut to standard pipe thread dimensions. Pipe shall be properly reamed after cutting of threads.

Joint compound, Rector seal Series 100, LACO Series slick-tite or equal thread lubricant shall be applied to male threads of the screwed pipe and fittings only.

Approved expansion joints or flexible couplings shall be provided as necessary.

Care shall be taken in making up pipe and fittings such that the pipe does not extend into fitting sufficiently to reduce the waterway.

Standard, one-piece reducing fittings of approved design shall be used wherever a change in size is made. Changes in pipe sizes shall not be made by means of reducing flanges.

Bushings may be used only where standard, one-piece reducing fittings are not available and shall be subject to the following:

(1) Bushings shall be of the face or flush type.
(2) Bushings shall not be used in elbow fittings.
(3) Bushings shall not be used when the reduction in size of the outlet is less than ½".
(4) Bushings shall not be used in more than one outlet of any tee or two outlets of any cross fitting.

Branch piping shall be taken off the top of all main piping.

PIPE SPECIALTIES:
Dielectric unions shall be used between copper and iron pipe.

Piping penetrating fire rated walls or ceilings shall be sealed with fire rated sealant in accordance with the manufacturer's recommendations for the specific U.L. Assembly.

PIPE HANGERS AND SUPPORTS:
This Contractor shall furnish and install all foundations and supports required for his equipment unless indicated otherwise on the Drawings.

This Contractor shall furnish and install all escutcheons, inserts, thimbles, hangers, etc. required for the proper support and installation of his equipment and piping and he shall cooperate with other trades in locating and placing these items.

PROVIDE SLEEVES FOR ALL PIPES PASSING THROUGH WALLS, FLOORS, BEAMS, ETC.:
Sleeves passing through structural members or concrete footings shall be of cast iron or Schedule 40 steel pipe. Sleeves passing through nonstructural walls or floors shall be of 26 gauge galvanized iron. Joints between sleeves and pipes

passing through floors shall be made weathertight with plastic materials. Where pipes pass through water proofing membrane, flashing sleeves shall be installed.

Provide Grinnel, Fee & Mason, or equivalent malleable iron split ring hangers with rod supports throughout. STRAP HANGERS OR WIRE WILL NOT BE ACCEPTED.

Maximum spacing of hangers shall be 5 ft..

Provide galvanized iron shields between hangers and pipe covering.

Provide producer specialty, Jones Manufacturing or equal chrome plated brass escutcheons wherever pipes pass through floors, walls or ceilings in exposed or finished areas.

VALVES AND UNIONS:
Furnish and install all valves, unions, stops, connections, etc. shown on plans and necessary to make a complete system in working order. Provide valves on inlet and outlet of all equipment and fixtures and on branch lines to fixtures or groups of fixtures.

Ball Valves, 3" and smaller, rated for 150 PSI saturated steam pressure, 600 PSI WOG pressure; shall be 2-piece construction, bronze body conforming to ASTM B-62, full port, chrome-plated brass vented ball, replaceable TFE seats and seals, blow-out proof stem, and vinyl-covered steel handle. Provide solder ends chilled water and domestic hot and cold water service of NIBCO Design S-580-70-66, Kitz #69, Apallo 70-240 or Milwaukee BA-150-S, threaded ends for heating hot water of NIBCO Design T-580-70-66, Kitz #68, Apallo 70-140 or Milwaukee BA-100-S. For insulated piping systems, provide ball valves with extended stem, insulated handle with protective thermal barrier sleeve to prevent condensate moisture drip and pipe insulation deterioration.

All valves, unions, etc. where pipe is chrome plated shall have similar finish. All exposed supplies to plumbing fixtures shall be chrome plated.

Butterfly Valves, 2-1/2-Inch and Larger: MSS SP-67; rated at 200 psi; ductile iron body conforming to ASTM A 126, Class B. Provide valves with molded in EPDM sleeve, nickel-plated ductile iron disc (except aluminum bronze disc for valves installed in condenser water piping), stainless steel stem, and EPDM O-ring stem seals. Provide lever operators with locks for sizes 2 through 6 inches and gear operators with position indicator for sizes 8 through 24 inches. Lug style butterfly valves shall be rated for bi-directional dead end service to the full working pressure of the valve.

Select Valves with the following ends or types of pipe/tube connections:

Copper Tube Size 2 Inch and Smaller: Solder ends, except provide threaded ends for heating hot water.

Steel Pipe Sizes, 2 Inch and Smaller: Threaded or grooved end.

Steel Pipe Sizes, 2-1/2 Inch and Larger: Grooved end or flanged.

INSTALLATION OF VALVES:
Use ball and butterfly valves for shut-off duty.

Locate valves for easy access and provide separate support where necessary.

Install valves and unions for each fixture and item of equipment arranged to allow equipment removal without system shutdown. Unions are not required on flanged devices.

Install valves in horizontal piping with stem at or above the center of the pipe.

Install valves in a position to allow full stem movement.

All valves, on insulated piping shall be complete with extended lever handle stem.

TEST:
Make such tests of work as specified or required by Owner or by State and Municipal Bureaus having jurisdiction, and under their supervision. Perform tests in presence of Architect's representative. Notify Owner two days prior to testing.

Provide apparatus, temporary piping connections, or other requirements necessary for tests. Take precautions to prevent damage to building or contents by tests. Contractor is required to repair and make good at his expense damage so caused.

Correct leaks, defects, or deficiencies discovered as result of tests. Repeat tests until test requirements are met. Caulking of pipe joints to remedy leaks is not permitted.

MOTORS, STARTERS AND ELECTRICAL WORK:
The Mechanical Contractor shall furnish to the Electrical Contractor for installation, all the motor starters, start-stop switches, variable frequency drives, and pilot lights for each piece of motor driven equipment unless shown otherwise.

The Electrical Contractor shall install all motor VFD's as furnished by the Mechanical Contractor. The Electrical Contractor shall also provide and install all power wiring required for the installation of such mechanical equipment.

The Mechanical Contractor shall furnish and install equipment interlocking, control wiring, etc., as hereinafter specified under Temperature Controls. All work shall be done in accordance with the National Electric Code requirements. The Mechanical Contractor shall be responsible for coordinating all work to provide a complete system in working order.

All electrical equipment shall have the U.L. Label and shall meet the standards of the National Electrical Code and NEMA.

MOTORS:
All motors on equipment shall be a Premium High Efficiency type motor.

Motors shall be of the 40° rise type, Class F insulation, NEMA Design B and totally enclosed fan-cooled (TEFC) design as a minimum. All motors shall be wound for plus or minus 10% of the specified voltage.

Motors shall meet the following horsepower ratings, and minimum full load efficiencies (U.S. IEEE 122A):

Motor Hp	Minimum Full Load Efficiency (Nominal)
0-2	84%
3	85%
5	87%
7, 5, 10	89%
15	90%
20	91%
25, 30	92%
40 and above	93%

Motors shall have 1.15 service factor rating for 3-phase motors and 1.35 for single-phase motors.

Motors shall be as manufactured by Century III E-Plus, Marathon Series Premium Blue Chip XRI or approved equivalent.

Motors which are controlled/started by variable frequency drives (Inverters) shall be Inverter Duty Motors. Motors shall be of the totally enclosed fan cooled (TEFC) type with Class F Insulation, ball bearings, Continuous Duty 40° C Ambient, Cast

Iron Frame, Class H magnet wire. Motors shall comply with NEMA MG1 Part 30/Part 31 requirements/specifications.

Motors shall be as Manufactured by Marathon Blue Max Inverter Duty or approved equivalent.

All motors shall be specifically designed for specific application specified (i.e.: AHU, etc.), and shall have built-in thermal overload protection.
The supplier shall provide a list of motors with nameplate data for each new motor submitted. Submit in shop drawings with associated motor efficiency.

PIPE MARKERS:
Provide pipe markers and directional arrows on all piping in mechanical equipment rooms, or which is exposed in building, and on both sides of all valves located above ceiling. Markers shall be as manufactured by W.H. Bradley Co., or the equivalent. All letters shall be color-coded and sized as recommended by OSHA. Samples of the type of letters to be used shall be submitted with shop drawings.

The following pipe shall be identified:

		Piping
HVAC Chilled Water Supply		X
HVAC Chilled Water Return		X
HVAC Hot Water Supply	X	
HVAC Hot Water Return	X	

Pipe markers with arrows shall indicate lines content and shall be located 20 feet on center and at each charge of direction of line. Identification bands shall be color coded to match pipe markers and shall be provided 10 feet on center. Pipe identification markers shall be taped at each end and shall be taped around the entire circumference of pipe.

INSULATION

GENERAL:
Pipe insulation shall not begin until all work has been tested and found to be tight. All insulation adhesives, sealers, tapes and mastic shall meet the latest NFPA requirements and shall meet 25/50 flame spread and smoke developed ratings.

All insulation shall be installed in strict accordance with the manufacturer's recommendations.

All pipe insulation where recommended by the manufacturer shall be banded with aluminum bands, three to a section and with one band on each side of each fitting, valve, etc.

Insulation shall be continuous through walls and ceilings.

All valves, strainers, etc. shall be insulated the same as its adjacent piping and the covering shall extend all the way up to the equipment.

SCOPE OF WORK:
The Contractor shall obtain the services of an independent Insulation Company which specializes in plumbing, heating, ventilating and air conditioning (HVAC) insulation to provide the materials and insulation as specified. Insulation shall not be installed in any area which has not been enclosed and protected from the weather unless approval has been granted by the Architect and Engineer.

The work included in this section consists of furnishing labor, materials and tools required in insulating the systems as described in these specifications or shown on accompanying drawings. Services shall include coordination with all trades, and final verification of all installation prior to wall or ceiling closure.

USE HIGH DENSITY INSULATION INSERTS AT HANGERS ON ALL PIPING 1-1/2" AND ABOVE TO PREVENT CRUSHING OF

INSULATION.

THERMAL INSULATION:
After all work has been tested and approved, insulate as follows:

INSULATION SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S RECOMMENDATIONS AND INSTRUCTIONS.

HVAC FLEX-CONNECTIONS:
Shall be wrapped on outside with 2.33" thick 3/4 # density fiberglass insulation with aluminum foil vapor barrier. Insulation shall be taped at all joints and installed per the manufacturer's recommendations.

Insulation shall have a minimum R-value of R-6.0 if located in an unconditioned space or R-8 if located outside of building.

HVAC MANUAL DAMPERS:
Shall be wrapped on outside with 2.33" thick 3/4 # density fiberglass insulation with aluminum foil vapor barrier. Insulation shall be taped at all joints and installed per the manufacturer's recommendations.

Insulation shall have a minimum R-value of R-6.0 if located in an unconditioned space or R-8 if located outside of building.

CHILLED WATER SUPPLY AND RETURN PIPING ABOVE SLAB:
Insulate lines above the slab with Pittsburgh Corning foamglass pipe covering with factory applied Flame Bar Jacket covering pipe and fittings with clear solvent weld joints and seams suitable for installation in return air plenum. All joints shall be firmly butted together. Seal all laps and butt joint strips with vapor barrier adhesive or sealant to meet manufacturers recommendations. Fittings to be insulated with pre-fabricated fitting covers and finished with an envelope coverage of vapor barrier mastic reinforced with Glassfab. All installation shall comply with manufacturers recommendations. Thickness to be 1" for pipe sizes up to and including 1" and 1-1/2" thick for pipe sizes 1-1/4" and above.

Chilled water supply and chilled water return lines exposed in mechanical rooms shall be covered with a white **0.020 GREEN colored PVC covering** with solvent weld joints and seams.

HOT WATER HEATING SUPPLY AND RETURN LINES:
Insulate lines above grade with 3-1/2 pound density fiberglass pipe covering. Finish to be factory applied flame safe vapor barrier jacket sealed and stapled in place.

Thickness to be 1" for run-outs up to and including 2" and 1-1/2" thick for other pipe sizes.

Finish entire installation with **white 0.020 PVC covering and fittings** similar to above.

Hot water supply and hot water return lines exposed in mechanical rooms shall be covered **with a 0.020 RED colored PVC covering** with solvent weld joints and seams.

CALIBRATED BALANCING VALVES:
Insulate calibrated balancing valves with molded insulated furnished with the unit and provide strap bands for access.

VALVES:
Insulate valves with molded insulated furnished with the unit and provide strap bands for access.

INSULATION THROUGH HANGERS AND SLEEVES:
The insulation shall be continuous through pipe hangers and pipe sleeves. At hangers where the pipe is supported by insulation, provide a galvanized iron protection shield. Provide pipes 2-inch i.p.s. and larger in insulation inserts at points of hanger supports. The inserts shall be of calcium silicate, cellular glass, pre-stressed molded glass fiber of minimum 13-pound density, or other approval material of the same thickness as adjacent insulation and not less than 13-pound density.

The inserts shall have sufficient compression strength to adequately support the pipe without compressing the inserts to a thickness less than the adjacent insulation. Inserts shall be 180 degrees and not less than the length of the protection shield. vapor barrier facing of the insert shall be the same as the facing on the adjacent insulation. Where copper clad hanger are used on domestic copper pipe, insulation may cover pipe and hanger. Provide 18 gauge metal saddles between all hangers and insulation.

INSULATION THROUGH FLANGES, VALVES, ELBOWS, ETC.:
The insulation shall be continuous around flanges, valves, elbows, and other devices located in the piping system. Provide fiberglass packing around devices where rigid insulation will not meet the contour of the device. Cover insulation with universal jacket and glassfab with mastic. Cover entire installation as indicated above.

AIR HANDLING UNITS

The Contractor shall guarantee all materials, equipment and workmanship for a period of one (1) year from the date of final acceptance of the project. This guarantee shall include furnishing of all labor and material necessary to make any repairs, adjustments or replacement of any equipment, parts, etc. necessary to restore the project or equipment to first class condition. This guarantee shall exclude only the changing or cleaning of filters. Warranties exceeding one (1) year are hereinafter specified with individual pieces of equipment from the date of final acceptance.

Provide custom indoor air handling units as manufactured by Nortek, Temtrol or prior approved equal. All manufacturers are required to meet the construction specifications, capacities and performance criteria.

Multi-Zone Air Handling Units shall be configured for blow-thru design (AHU 1-2 & 1-3).
Single Zone Air Handling Units shall be configured for draw-thru design (AHU 1-4).

Provide factory manufactured air-handling units with bolted or welded construction, designed to the performance levels.

Fabricate air-handling units suitable for the scheduled capacities.

Factory test and balance fan design and drives to limit vibration at operating speeds.

All internal components specified in the air handling unit schedule shall be factory furnished and installed. Unit(s) shall be completely factory assembled.

All units shall be complete with all components and accessories as specified.

The air handling unit shall be specifically designed for use in an indoor application with dimension limitations as indicated on plans and shall fit in the space available with adequate clearance for service as determined by the owner. Units shall be shipped in modular sections as required to be able to be moved into the space by the contractor.

The construction of the air handling unit shall consist of a complete structural frame with removable panels. All panels shall be completely gasketed prior to shipment and shall be completely removable for unit access and removal of components. Removal of any or all panels shall not affect the structural integrity of the unit.

The air-handling unit shall be supplied with double wall panels for walls, roof, and floor constructed of G90 mill galvanized sheet steel.

The air handling unit casing shall be constructed of 2” thick double wall roof panels, floor panels, and wall panels having exterior construction of 20 gage G90 galvanized steel. Exterior casing screws shall be zinc chromate coated.

Floor panels shall be double wall construction, designed to provide at most L/240 deflection based on 300 lb. concentrated load at mid-span.

The air-handling unit shall be completely insulated throughout all panels and structural frame members with spray injected

foam or non-compressed fiberglass to thoroughly insulate and seal the air unit structure. Openings in structural channels shall be covered. If structural channels are not internally insulated, then structural channels must be wrapped with an armaflex type insulation to maintain unit thermal performance and prevent sweating. Any portion of the unit that is not insulated (gaps) or has less than 2" of insulation shall be the responsibility of the contractor to modify.

Insulation shall be a minimum of a full 2" throughout the entire unit.
Units with less than 2" of insulation in any part of the walls, floor, or roof shall not be acceptable.
Insulation application shall conform to NFPA 90A requirements.
Panels shall have a minimum thermal conductivity R of 12.5 BTU/hr-ft2-°F.
All drain pans shall have welded double-wall stainless steel construction and be insulated with spray injected foam or fiberglass insulation.

Double wall access doors shall be provided on sections as scheduled. Doors shall be of the same material type as the wall panels. A bulb-type gasket shall be provided around the entire door perimeter. Industrial style stainless steel hinges shall permit a complete 180 degree door swing. All doors shall open against positive pressure. Alternatively, if doors opening against positive pressure are not available, a safety chain mechanism and warning labels shall be provided to prevent injury to maintenance personnel.

Access door must be of the same material type as exterior/interior casing.
Access door latches shall utilize a roller cam latching mechanism to insure maximum sealing. Latches featuring are not acceptable.

Leakage B Manufacturer shall perform a certified factory test proving that maximum allowable air leakage shall not exceed 1% and panel deflection shall not exceed a L/200 or L/240 ratio when subjected to 8-in. w.g. static pressure. If panels cannot meet this deflection, internal reinforcing must be added.

Provide double width double inlet (DWDI) housed fans (Single Zone Unit 1-4) or single width single inlet (SWSI) plenum fans (Multi-Zone Units 1-2 & 1-3) as indicated on equipment schedule on drawings.

Airfoil fans shall comply with AMCA standard 99-2408-69 and 99-2401-82. Provide an AMCA Seal on airfoil fans. Airfoil fan performance shall be based on tests made in accordance with AMCA standards 210 and comply with the requirements of the AMCA certified ratings program for air performance.

Provide fans with the following accessories:
Fan inlet screens in the inlets of fan housing.
Access door inlet screen (on AHU casing).
OSHA compliant belt guard enclosing the fan motor and drive.

Mount the fan and motor assembly on a common adjustable base. This common base shall attach to vibration isolators, which mount to structural support channels. These channels shall span the AHU floor and/or mount directly to the AHU frame. Manufacturers not complying with this requirement must submit detailed structural and weight data to a licensed structural engineer for review and stamped certification. The Owner shall review these engineers' final reports prior to submittal approval.

Provide vibration isolation springs with 2" static deflection.

Fan bearings shall be designed for an average life (L50) of at least 200,000 hours.

Single width single inlet (SWSI) Plenum fans (AHU 1-2 & 1-3) shall be direct drive.
Double width double inlet (DWDI) housed fans (AHU 1-4) shall be belt drive.

All re-greaseable bearings shall be factory lubricated and equipped with standard hydraulic grease fittings and lube lines

extended to the motor side of the fan. Re-greaseable bearings provided without factory installed lubrication lines are unacceptable.

Fan drives shall be selected for a 1.5 service factor.

All drives shall be fixed pitch.
Sheaves shall be machined from a close grain cast iron and statically balanced by the manufacturer. A fixed pitch sheave shall be provided on the motor.

Fan motors shall be furnished in sizes, electrical power and starting characteristics as shown in the schedule.

All fan motors will be built in accordance with the latest standards of the National Electrical Manufacturer's Association (NEMA) and IEEE and shall be rated for continuous duty at full load at 40_C ambient temperature rise and a service factor of 1.15.
Fan motors shall be NEMA design ball bearing type.
Fan motors shall be 1800 RPM nominal as required to meet fan capacities.
All fan motors shall be TEFC, inverter duty high efficiency type to meet EPACT requirements.

Coil segment length shall be optimized to contain selected coils, spacer, and optional access doors. Coils shall be selected to maximize unit tunnel area using single coil arrangements as needed to satisfy required coil face areas.

Coil segment design and coil selection shall not require a drain pan in any downstream section to contain the coil condensate.
All water coils shall have performance certified in accordance with ARI Standard 410 for coil capacity and pressure drop.
Maximum cooling or heating coil fin density shall be 10 fins per inch.
Maximum Cooling coil face velocity shall be 500 feet per minute.
Heating coils shall be 2 rows (minimum).
Coil segment side and top panels shall be removable to allow for removal and replacement of coils, without affecting the structural integrity of the unit.
Upstream and downstream segment door clearances shall accommodate a minimum 2-inches of field installed external piping insulation.

Cooling Coil Segment shall be provided with a full-width, multi-sloped stainless steel (IAQ) drain pan that extends downstream a minimum 19” beyond the last coil in the section to provide drain pan access for cleaning and inspection.

Cooling coil for AHU 1-4 shall be in the vertical position behind the flat filter section. The heating coil (in the re-heat position) shall be in the horizontal position just below the fan module section. The cooling and heating coils shall be positioned such that both coils can be cleaned from both sides of the coils.

Drain pans shall be sloped in a minimum of 2 planes; cross break interior pans and pitch toward drain connections to ensure complete condensate drainage. Units with cooling coils shall have drain pans under complete cooling coil section. A minimum of 1” clearance shall be provided from the bottom of the coil casing to the drain pan so that the drain pan can be visually inspected and physically cleaned, including underneath coil, without removal of the coil.

The drain pan shall be of double wall construction stainless steel and shall be insulated with spray-injected foam to completely seal the drain pan assembly.

The drain pan shall be of double wall construction of 16 gage stainless steel and shall be fully insulated with spray injected foam, completely sealing the drain pan assembly.

The drain pan shall have a mastic coating.

Drain pan shall be provided with a minimum 1-1/4" MPT condensate connection positioned beneath the lowest point of

the drain pan. Drain connection shall be welded to the drain pan and shall match the drain pan liner material type. If threaded screw-type joint is used, all joints must be easily accessible for inspection and service.

All coils shall be slide out type, mounted on tracks, and easily removable from the air handling unit by removing only one exterior panel. Coils that require additional disassembly of the unit or replacement of the entire coil section for coil removal are unacceptable.

The primary surface shall be 1/2" or 5/8" O.D. copper tube, staggered in direction of airflow. Tubes shall be mandrel expanded to form fin bond and provide burnished, work-hardened interior surface. The tubes shall have a minimum tube wall thickness of .020" copper. Specified thickness shall be maintained throughout the tube including brazed U-bends.

Extended surface shall consist of die-formed, continuous, aluminum corrugated fins. The fins shall have fully drawn collars to accurately space fins, and to form a protective sheath for the primary surface.

Coils with finned height greater than 48 inches shall have an intermediate drain pan extending the entire finned length of the coil. Cooling coils in excess of 48 inches in height shall not be acceptable unless provided with an intermediate drain pan. The intermediate pans shall have copper down spouts to guide condensate to the main drain pan.

Coil casing shall be constructed of galvanized steel. Tube sheets on each end shall have drawn collars to support tubes. A single intermediate coil support shall be provided on coils with a finned length of more than 62 inches, two (2) intermediate supports above 100 inches in length, and three (3) intermediate supports on coils with a finned length of more than 141 inches. Casing channels shall be free-draining, without depressions to collect moisture and contaminants. Casing channels shall not block fin area.

Headers shall be of heavy seamless copper tubing, silver-brazed to tubes. Connections shall be of steel, with male pipe threads, silver-brazed to the headers. A 1/4" FPT, plugged vent or drain tap shall be provided on each connection. All vent and drain connections shall be extended to the outside of the unit casing.

Circuiting shall be to provide free draining and venting, through one vent and one drain on each coil, when installed with casing level. Coils shall be circuited, and have connections arranged, for counter-flow of air and water with supply on bottom and return on top of coil headers. Coil circuiting shall provide for design water velocity in tubes without exceeding total water pressure drops in schedule.

Coils using turbulators are unacceptable.

Multi-Zone Units - Blow thru coil section shall be provided downstream of fan section and diffuser. Coil section shall be manufactured to allow for parallel airflow across both the cooling coil and the heating coil.
Multi-Zone Units - Provide multi-zone dampers on discharge of coil section(s), in the vertical position (top side of unit).

Filters and filter segments shall be 2", 30% efficient.
Filter tracks shall be constructed of galvanized steel and be built as an integral part of the unit.
Filter media shall be listed Class 2 or Class 1 under U.L. Standard 900 as required by local codes.

Provide two (2) sets of spare media.

Filter section shall be flat as indicated on.

Air-handling units constructed of G90 galvanized sheet steel with no paint shall exceed 220-hour salt spray solution (5%) without any sign of red rust when tested in accordance with ASTM B-117.

All units shall be shrink-wrapped by the manufacturer prior to shipment to prevent damage due to weather and road debris during transportation and thereafter while in storage awaiting installation. Alternatively, units may be completely covered by tarps while in transit or shipped in an enclosed truck. Units not factory shrink-wrapped shall be re-covered by the

contractor at the job- site while awaiting installation. Protection of the complete unit for avoidance of general rusting must be handled as best suits the circumstances. Store in a place protected from construction traffic and handle carefully to avoid damage to components, enclosures, and finish.

LABELING A/C UNITS:
All indoor units shall be labeled with permanent laminated plate riveted to unit.
Units shall be labeled as indicated in schedules.
Plate shall be black with white unit numbers.
Height of unit number shall be minimum of one (1) inch.

VARIABLE FREQUENCY DRIVES

Variable Frequency Drives (VFD's) for new Air Handling Units (AHU's) shall serve AHU's with three (3) plenum fan motors. Motor sizes shall be as indicated in schedules. Coordinate final motor size with AHU manufacturer. AHU's shall be provided with a panel with overload motor protection for each fan motor. The panel shall have single point power connection for each VFD.

All Variable Frequency Drives (VFD's) specified under this section shall be provided by the same manufacturer.

All VFD's installed in return air plenums shall be plenum rated.

Extent of motor starter and/or variable frequency drive work is indicated by drawings, schedules and specifications. All motors and mechanical equipment provided with motors supplied by the Mechanical Contractor shall be also provided with Motor Starters and/or Variable Frequency Drives. It is the responsibility of the Mechanical Contractor to insure that all VFD's are sized and suitable for the intended purpose of the mechanical equipment provided.

The Mechanical Contractor shall provide the VFD's to the Electrical Contractor for mounting, installation, and connection by the Electrical Contractor.
Disconnecting means unless integral to the Starter/VFD shall be provided by the Electrical Contractor.

Variable Frequency Drives (VFDs): Stand-alone dual output Variable Frequency Drives.

All Variable Frequency Drives shall be of the same manufacturer.
Variable Frequency Drives located in mechanical rooms shall be Free-Standing Units.
Variable Frequency Drives shall be plenum rated where installed in mechanical rooms which are used as return air plenums.
Variable Frequency Drives (VFD's), Variable Speed Controllers (VSD's), and Adjustable Speed Drives are also referred to as AC Drives and their nomenclature shall be used interchangeably.
Drives are for use with NEMA -B or NEMA -E, MG-1 design AC motors.
Drives coordinated short circuit current shall be rated in accordance with UL 508C -Standard for Safety for Power Conversion Equipment.
Drives which do not bear the short circuit current on the drive nameplate shall not be permitted.
Drives shall also be tested in accordance with NEMA ICS 7.1 -Safety Standard for the Construction and Guide for Selection, Installation, and Operation of Adjustable Speed Drive Systems.

REFERENCES
ANSI/NFPA 70 - National Electric Code
IEC 60068, Part 2-3
NEMA ICS
UL 50, 98, 507, 508, 508C, 991
OSHA 1910.95 - AC Drive Controller Acoustical Noise

MANUFACTURERS

Acceptable Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the Work include the following: Yaskawa Z1000.

GENERAL

Environmental Ratings:
The Service Voltage for the Project is 480/3/60.
The AC Drive shall meet IEC 60664-1 Annex A and NEMA ICS 1, UL, and CSA standards.
For indoor installation, the AC Drive shall be designed to operate in an ambient temperature environment from 0°C to 40°C (32°F to 104°F).
The storage temperature range shall be -25°F to 60°C (-13°F to 149°F)
The maximum humidity shall be 90 % at 40°C (104°F) non-condensing.
The AC Drive shall meet the IEC 60721-3-3M3 operational vibration specification.
Drives shall be plenum rated where installed in return air plenums.

Construction:
For indoor installation the AC Drive power converter shall be enclosed in a Type 12K (NEMA 12) enclosure with top and bottom conduit knockouts with a circuit breaker disconnect, industrial rated operator controls, user terminal strip connections, and by-pass controls.
The enclosure shall provide dedicated user terminals for power and control device connection.
Provisions shall be included for locking the disconnect in the "OFF" position with a padlock.
All enclosure heat sink fans shall be front accessible and shall not require the removal of the AC Drive converter.
Provide 5% DC Bus Reactor, Service Switch, LCD Keypad.
Provide Service Switch.
Provide Circuit Breaker Disconnect with UL508A Panel SCCR of 100k ms.Sym., 480V (In lieu of Standard Input Disconnect).

Harmonic Mitigation:
The electrical distribution system shall be designed to meet IEEE-519-1992 with the addition of line reactors. These line reactors shall be mounted inside the drive enclosure.

All VFD's shall be rated for "constant torque" at temperatures stated in section 2.2, B and shall be capable of operating in location shown on contract documents.

Provide internal cooling fans sized and rated for the conditions stated above.
The controller, bypass assembly, disconnect switch and controls shall be by the same manufacturer, factory installed, and shall be self-contained in a single convection cooled cabinet.
All terminal blocks provided for field wiring shall be pre-wired at the factory.

The VFD shall utilize Pulse Width Modulated (PWM) design with latest generation IGBT's.

Unit shall be UL listed and rated.
Unit shall have output current rating of 110% of motor FLA for one (1) minute.
Unit shall take incoming fixed frequency three-phase AC power into a variable frequency and voltage for controlling the speed of three-phase AC motors.
The motor current shall closely approximate a sine wave.
Motor voltage shall be varied with frequency to maintain desired motor magnetization current suitable for centrifugal pump and fan control and to negate the need for motor derating.
Provide short circuit and ground fault protection.
Provide non-volatile memory.
Provide and be capable of single-phase input operation with 50% VFD derating.
Minimum efficiency shall be 97% at full load, full speed.

Unit shall be capable of operation on an AC line containing line notching and up to 10% THD and capable of operation with motor disconnected from output.
VFD to be compatible with NEMA Design "B" motors.
VFD shall report to the Building Automation System (BAS) via a direct N2 connection.

An advanced sine wave approximation and voltage vector control shall be used to allow operation at rated motor shaft output at nominal speed with no derating. This voltage vector control shall minimize harmonics to the motor to increase motor efficiency and life.

Reference Signal:
In the event of loss of the reference signal. The VFD shall alarm and go to one of the following user programmable conditions: Stop, Maintain last reference, Go to pre-set speed, and Go to maximum speed.

The VFD shall include a full-wave diode bridge or SCR rectifier and maintain a fundamental power factor near unity regardless of speed or load. If SCR's are utilized, they shall be gated fully on once pre-charge is complete.

The VFD and options shall be tested to ANSI/UL Standard 508. The complete VFD, including all specified options, shall be assembled by the manufacturer, which shall be UL-508 certified for the building and assembly of option panels. Local representative panel shop assembly for option panels is not acceptable. The appropriate UL stickers shall be applied to both the drive and option label, in the case where these are not contained in one panel.

The VFD shall have a DC link reactor to minimize power line harmonics. VFDs without a DC link reactor shall provide a 3% impedance line reactor.

The VFD's full load amp rating shall meet or exceed NEC Table 430-150. The VFD shall be able to provide full rated output currently continuously, 110% of rated current for 60 seconds and 150% of rated current for up to 0.3 seconds while starting.

The VFD shall be able to provide full torque at any selected speed up to base speed to allow driving direct drive fans without derating.

The VFD shall be provided with a selectable soft start, linear, or S-curve start function.
Provide selectable ramp to stop, coast, brake, and S-curve stop function.

An automatic energy optimization selection feature shall be provided standard in the drive. This feature shall automatically and continually monitor the motor s speed and load and adjust the applied voltage to maximize energy savings.

An automatic motor adaptation test algorithm shall measure motor stator resistance and reactance to optimize performance and efficiency. It shall not be necessary to run the motor and decouple the motor from the load to run the test.

PROTECTIVE FEATURES
Class 10 I square root electronic motor overload protection for single motor applications and thermal-mechanical overloads for multiple motor application.

Phase-to-phase and phase to neutral short circuit protection. Drive shall include current sensors on all three output phases to detect and report phase loss to the motor. The VFD will identify which of the output phases is low or lost.

Protection against input transients, loss of AC line phase, short circuit, ground fault, over voltage, under voltage, drive over temperature and motor over temperature. The VFD shall display faults in plain English. Codes are not acceptable.

Protect VFD from sustained or intermittent power or phase loss. The VFD shall provide full rated output with an input voltage as low as 90% of the nominal. The VFD will continue to operate with reduced output with an input voltage as low as 285 volts for 480 Volt units.

The VFD shall incorporate a motor preheat circuit to keep the motor warm and prevent condensation build up in the stator.

Drive shall maintain logic control and shall not fault for 2 seconds after a power loss.

Drive shall have semi-conductor rated input fuses to protect power components.

To prevent breakdown of the motor winding insulation, the dV/dt must be below 1500 V/msec per IEC recommendations. The supplier shall include with the quotation the V/dt values of the drive.

Drive shall include a "signal loss detection" circuit to sense the loss of the control signal and shall be programmable to react as desired in such instance.

Drive shall catch a rotating motor operating forward or reverse up to full speed.

VFD shall be rated for a minimum 60,000 amp interrupting capacity (AIC).

Drive shall include UL 508C programmable electronic motor overload.

Drive shall continue to operate without faulting until input voltage exceeds 604 volts on 480-volt drives.

INTERFACE FEATURES

Hand/Start, Off/Stop and Auto/Start selector switches shall be provided to start and stop the drive and determine the speed reference.

Provide a 24 V DC output signal to indicate that the drive is in Auto/Remote mode.

Digital manual speed control. Potentiometers are not acceptable.

Lockable, alphanumeric backlit display keypad that can be remotely mounted up to 10 feet away using standard 9-pin cable.

All keypads shall be identical and interchangeable.

Drive shall be capable of being operated with the keypad removed.

All drives shall utilize the same control keypad.

To setup multiple drives, it shall be possible to upload all setup parameters to the drive's keypad, place that keypad on all other drives in turn and download the setup to each drive.

Display shall be programmable to display in English.

The display shall have minimum of four lines, with 20 small characters or eight large characters on each line.

Three (3) lines of the display shall allow free programming so that the exact unit controlled by the drive can be identified.

A red "FAULT" light, a yellow "WARNING" light and a green "POWER-ON" light shall be provided. These indications shall be visible both on the keypad and on the drive when the keypad is removed.

A quick setup menu with the most common HVAC parameters shall be provided on the drive eliminating the need for macros.

The drive shall be fitted with an RS 485 serial communications port with capability for remote monitoring signals.

Two set-point control interface (PID control) shall be standard in the unit. Drive shall be able to look at two feedback signals, compare with two set-points and make various process control decisions.

Floating point control interface shall be provided to increase/decrease speed in response to switch closures.

Sleep mode shall be provided to automatically stop the drive when speed drops below set “sleep” level for a specified time. Drive automatically restarts when speed command exceeds set “wake” level.

Run permissive circuit shall be provided to accept a “system ready” signal to assure that the drive does not start until dampers or other auxiliary equipment are in the proper state for drive operation.

An elapsed time meter and kWh meter shall be provided.

The following displays shall be accessible from the control panel in actual units:

Reference Signal Value in actual units
Output Frequency in Hz or percent
Output Amps
Motor HP
Motor KW
KWH
Output Voltage
No Load Warning
DC Bus Voltage
Drive Temperature in degrees
Motor Speed in engineering units per application (in percent speed, GPM, CFM). Drive will read out the selected engineering unit either in a linear, square or cubed relationship to output frequency as appropriate to the unit chosen.

Up to four-meter displays can be shown at once on the display. This allows the actual value of the follower signal to be shown simultaneously with the drive’s response to that signal for ease in commissioning.

Drive will sense the loss of load and signal a no load/broken belt warning or fault.

The VFD shall have temperature controlled internal cooling fans for quiet operation and minimized losses. Fan shall be sized for ambient conditions in which drive is installed. Drives that overheat in Mechanical spaces (ambient temperatures at 120 deg. F or below) for the installed load, shall be removed and replaced with suitable new unit, at no cost to Owner.

The VFD shall store in memory the last four (4) faults (minimum) and record all operational data.

Seven (7) programmable digital inputs shall be provided for interfacing with the systems control and safety interlock circuitry.

Two (2) programmable relay outputs, one form C 240 V AC, one Form A 50 V AC, shall be provided for remote indication of drive status.

Two programmable analog inputs shall be provided and shall accept a direct-or-reverse acting signal. Analog reference inputs accepted shall include 0-10V dc, 0-20 mA and 4-30mA.

Two programmable analog outputs shall be provided for indication of drive status.
These outputs shall be programmable for output speed, voltage, frequency, amps and input kW.

ADJUSTMENTS
VFD shall have an adjustable carrier frequency.
Seven (7) preset speeds shall be provided.
Two (2) acceleration and two (2) deceleration ramps shall be provided.

Acceleration and deceleration time shall be adjustable over the range from 0 to 3,600 seconds to base speed.
The shape of these curves may be automatically contoured to prevent tripping.
Four current limit settings shall be provided.
If the VFD trips on one of the following conditions, the VFD shall be programmable for automatic or manual reset: under voltage, over voltage, current limit, inverter overload and motor overload.
The number of restart attempts shall be selectable from 0 through 20 and the time between attempts shall be adjustable from 0 through 600 seconds.
An automatic "on delay" may be selected from 0 to 120 seconds.

BYPASS

Provide a 3-Contactor bypass.
Provide a manual bypass consisting of a door interlocked main fused disconnect pad-lockable in the Off" position, a built-in motor starter and a four position DRIVE/OFF/LINE/TEST switch controlling three contactors. In the drive position, the motor is operated at an adjustable speed from the drive. In the Off" position, the motor and drive are disconnected. In the LINE position, the motor is operated at full speed from the A/C power line and power is disconnected from the drive so that service can be performed. In the TEST position, the motor is operated at full speed from the AC line power. This allows the drive to be given an operational test while continuing to run the motor at full speed in bypass. Supplemental, normally closed, dry contact shall be furnished with the drive and interlocked with the drives safety trip circuitry to stop the motor whether in DRIVE or BYPASS mode in case of an external safety fault.

SERVICE CONDITIONS

Unit shall be suited to operate in environmental temperatures up to 122 deg. F (50 deg. C), and up to 90% relative humidity (non-condensing) expected for environment in which installed. Provide high capacity cooling fans and enclosures rated for ambient conditions.

Input AC line voltage variation, -10 to +10% of nominal with full output. Input frequency - +/- 5% 50/60 Hz. 3-phase, 3-wire, phase sequence insensitive.

Service Factor: 1.0

No side clearance shall be required for cooling of any NEMA 1 units, or of any NEMA 12 units of less than 75 HP at 460 volts.
All power and control wiring shall be done from the bottom of the drive, unless otherwise noted or coordinated differently from that stated by Contractor.

QUALITY ASSURANCE

To ensure quality and minimize failures at the job site, the complete VFD shall be tested by the manufacturer. The VFD shall operate a dynamometer at full load and the load and speed shall be cycled during the test.
All features shall be functionally tested at the factory for proper operation.

SUBMITTALS

Submit manufacturer's performance data including dimensional drawings, power circuit diagrams, installation and maintenance manuals, warranty description, VFD's FLA rating, certification agency file numbers and catalog information.

The specification lists the minimum VFD performance requirements for this project. Each supplier shall list any exceptions to the specification. If no departures from the specification are identified, the supplier shall be bound by the specification.

Indicate all field wiring and factory wiring clearly in submittal. All field wiring other than work shown to be part of Division 16 work on electrical drawings shall be by Division 15 Contractor furnishing drives.

START-UP SERVICE

Installation of drives shall be in compliance and in accordance with manufacturer's instructions, drawings, and recommendations.

The manufacturer shall provide start-up, testing, and commissioning of the variable frequency drive(s); to certify and inspect the installation of the drive; and to verify all circuits by a factory certified service/technical representative who is experienced in start-up and repair services. The technical representative shall be the same personnel that will provide the factory service and warranty repairs at the customer's site. Sales personnel and other agents who are not factory certified technicians for VFD field repair shall not be acceptable as commissioning agents. Start-up services shall include checking for verification of proper operation and installation for the VFD, its options and its interface wiring to the building automation system.

WARRANTY

The VFD shall be warranted by the Contractor for a period of three (3) years (36 months) from date of substantial completion of the project and not from date of shipment or installation. The contractor shall include in his bid, all manufacturer's "extended warranty" costs associated with this requirement. The Warranty shall include all parts, labor, travel costs and living expenses incurred by the manufacturer to provide factory authorized on-site service. The warranty shall be provided by the VFD manufacturer.

Documentation:

The AC Drive manufacturer shall provide a comprehensive 8 " x 11" bound instruction/installation manual that includes wiring diagrams, layout diagrams, and outline dimensions. The manual shall be in a 3-hole binder and punched for insertion into a shop manual supplied by the installing Contractor.

EXAMINATION

Contractor and factory start-up technician shall verify that job site conditions for installation meet factory recommended and code-required conditions for VFD installation prior to shop drawing submittal. These conditions shall be re-verified prior to start-up, including clearance spacing, temperature, contamination, dust, and moisture of the environment. Separate conduit installation of the motor wiring, power wiring and control wiring, and installation per the manufacturer's recommendations shall be verified. Factory certified service technician, by virtue of completing the "start-up" of the drive, is certifying that actual environmental/code required conditions have been found to be satisfactory or have been corrected to manufacturer's satisfaction (if originally found unsatisfactory). A start-up sheet signed by the factory certified service technician shall be bound into the final Operation and Maintenance Manuals turned over to the Owner's Representative.

The VFD is to be covered and protected from installation dust and contamination until the environment is cleaned and ready for operation.
The VFD shall not be operated while the unit is covered.

TRAINING & DEMONSTRATION

Demonstration Services:
Arrange and pay for a factory-authorized service representative to train Owner's maintenance personnel on the following:
Procedures and schedules related to start-up and shut down, troubleshooting, servicing, preventative maintenance, and how to obtain replacement parts.
Familiarization with contents of Operating and Maintenance Manuals specified in contract documents.
Provide Service Manuals for each variable frequency drive specified.

Provide four (4) hours of factory authorized training.
Schedule training with Owner's Representative with at least seven (7) days notice.

INSTALLATION OF PIPING:

Furnish and install complete piping systems as shown on the plans. Valve equipment on both inlet and outlet. Pipe on all vent valves and relief valves to drains.

Furnish and install a drain valve in each of the supply and return mains at the low points in the system.

Install isolation valves as required to phase piping installation, yet maintain proper operation of HVAC equipment required to be on line to maintain building occupancy.

Furnish and install an adequate means of eliminating the air from the chilled water and hot water piping systems. Provide automatic float type air vents, Bell and Gosset No. 87 or Maid-O-Mist #75 at all points where air might be trapped. In addition, provide manual air vent valves at all high points of risers, etc. All automatic air vents shall have shut-off cock between vent and piping (minimum 1").

Provide hose connection, valves, air vents, etc. on all chilled water and hot water heating piping, so that the piping can be tested. All new piping shall be properly flushed prior to final connections to existing piping.

All pipe shall be true and straight, without sags or traps. All taps to feed equipment shall be from the top of the main.

Furnish and install all butterfly valves, ball valves, check valves, balancing valves, hangers, floor and ceiling plates, etc., to make the system complete.

Screw joints shall be made up with graphite and oil, or other approved compound for a water system.

PRESSURE AND TEMPERATURE STATIONS:
Supply and install in the supply, return and bypass of each chilled water coil and hot water coil a T & P plug (1/4" MPT) fitting to receive either a temperature or pressure probe having 1/8" diameter stems. Fittings shall be solid brass with self-sealing valve core of Nordel, suitable for pressures to 1000 psig and temperatures at 275°F. Fitting cap shall be installed to extend above insulation.

TESTING HYDRONIC PIPING SYSTEMS:
New Chilled and Hot water piping shall be tested under 200 psi hydrostatic pressure for a minimum of 5 hours.

AUTOMATIC AIR VENT:
Furnish air vents at all high points within the system and as indicated on the plans. Standard capacity air vents shall be float type, with a maximum rating of 145 psi working pressure at 240°F. Housing shall be constructed of forged brass, with internal valve, seat, polypropylene float and stainless steel lever. Units shall have 1/8" system connection size. Air vents shall be as manufactured by B&G Model 87, Maid-O-Mist No. 75, Taco Hy-Vent Series 400 or equal.

EXECUTION:
All installations shall comply with N.F.P.A. 90A and shall be installed in accordance with all local and state codes.

All H.V.A.C equipment shall be installed and or piped to allow for complete servicing, access, and maintenance. Provide any offsets or deviations necessary to accommodate servicing of equipment. This contractor shall verify all locations, routing, installation and sizes with drawings and existing conditions on site prior to any equipment installation.

AIR PURIFICATION SYSTEM

PART 1 – GENERAL

1.1 DESCRIPTION OF WORK

A. This section describes the design, performance and installation of an air purification system intended for use as part of another manufacturer's air handling unit or mounted on the duct as shown on the plans, details and equipment schedules.

1.2 REFERENCED CODES & STANDARDS

A. The following codes and standards are referenced throughout. The edition to be used is that currently enforced by the authority having jurisdiction (AHJ) or in absence of such direction that referenced by the current enforceable IBC code or as indicated by the contract documents, except where specifically referenced by this section of the specifications.

1. ASHRAE Standards 62 & 52
2. National Electric Code NFPA 70
3. UL 867 including ozone chamber test

1.3 RELATED WORK

A. Testing, Adjusting and Balancing
B. Facility Access and Protection
C. Ductwork
D. Filters
E. Electrical Wiring
F. Control Wiring

1.4 QUALITY ASSURANCE

A. The Air Purification System shall be a product of an established manufacturer in the USA and shall be manufactured and assembled in the USA.

B. A qualified representative from the manufacturer shall be available to inspect the installation of the air purification system to ensure installation in accordance with manufacturer's recommendation.

C. Technologies that do not address gas disassociation such as UV lights, powered particulate filters and/or polarized media filters shall not be considered. Uni-polar ion generators shall not be acceptable. “Plasma” particulate filters shall not be acceptable.

D. Projects designed using ASHRAE Standard 62.1 *IAQ Procedure* shall require the manufacturer to provide Indoor Air Quality calculations using the formulas within ASHRAE Standard 62.1 to validate acceptable indoor air quality at the outside air quantity scheduled. The manufacturer shall provide independent test data on a previous installation in a similar application that proves compliance to ASHRAE 62.1 and the accuracy of the calculations.

E. The Air Purification Technology shall have been tested by UL or Intertek/ETL to prove conformance to UL 867-2007 including the ozone chamber testing and peak ozone test for electronic devices. All manufacturers shall submit their independent UL 867 test data with ozone results to the engineer during the submittal process. All manufacturers shall submit a copy with their quotation. Contractors shall not accept any proposal without the proper ozone testing documentation.

F. Foreign Product Limitations: "Foreign products" as distinguished from "domestic products" are defined as products that are either manufactured substantially (50% or more of value) outside of the United States and its possessions or produced or supplied by entities known to be substantially owned (more than 50%) by persons who are not citizens of nor living within the United States and its possessions. Raw materials shipped from the U.S. to a foreign country for final manufacture or fabrication, shall not qualify.

1. Except where no domestic product is available that complies with the requirements of the contract documents, select and provide domestic, not foreign products, for inclusion in this project.

1.5 SUBMITTALS

A. Submit manufacturer's technical product data for ion generators including:

1. Schedule of plasma generators indicating model number and quantity of each type required for each unit/application.
2. Submittal sheet for each type of plasma generator and accessories furnished; indicating construction, dimensions, electrical data, and mounting details.
3. Indoor Air Quality calculations using the formulas within ASHRAE Standard 62.1-2007 to validate acceptable indoor air quality at the quantity of outside air scheduled (when projects are designed with reduced outside air).
4. Product drawings detailing all physical, electrical and control requirements.
5. Copy of UL 867 independent ozone test.

B. Operating & Maintenance Data: Submit O&M data and recommended spare parts list.

1.6 PRODUCT DELIVERY, STORAGE AND HANDLING

A. Delivery of products shall be in factory fabricated shipping cartons. Identify on outside of carton the type of product contained within. Avoid crushing or bending.

B. Store in original cartons and protect from weather and construction work traffic.

C. Store indoors and in accordance with the manufacturers' recommendation for storage.

1.7 WARRANTY

A. Equipment shall be warranted by the manufacturer against defects in material and workmanship for a period of twelve months after shipment or eighteen months from owner acceptance, whichever occurs first. Labor to replace equipment under warranty shall be provided by the owner or installing contractor.

PART 2 – PRODUCTS

2.1 GENERAL

A. The air purification system(s) shall be of the size, type, arrangement and capacity indicated and required by the unit furnished and shall be manufactured by Plasma Air International Model 7402 (4200 to 6000 CFM) (120/1/60 Electric Service)(Plug in Wall Pack with 10 feet minimum power cord between Duct Mounted Ionization Device and Wall Pack). All nine (9) devices shall be designed to mount on internally insulated supply ductwork as indicated on drawings. One (1) Device for each supply duct (Total of Nine (9) Breach Ducts).

2.2 BI-POLAR IONIZATION DESIGN & PERFORMANCE CRITERIA

A. Each piece of air handling equipment, so designated on the plans, details, equipment schedules and/or specifications shall contain a plasma ion generator with bipolar ionization output as described here within.

B. The Bi-polar Ionization system shall be capable of:

1. Effectively killing microorganisms downstream of the bipolar ionization equipment (mold, bacteria, virus, etc.).
2. Controlling gas phase contaminants generated from human occupants, building structure, furnishings and outside air contaminants.
3. Reducing space static charges.
4. Reducing space particle counts.
5. When mounted to the air entering side of a cooling coil, keep the cooling coil free from pathogen and mold growth.
6. All manufacturers shall provide documentation by an independent NELEC accredited laboratory that proves the product has minimum kill rates for the following pathogens given the allotted time and in a space condition:
    a) MRSA: 99.5% in 60 minutes or less

b) E. Coli: 93.5% in 30 minutes or less
c) H1N1: 86.6% in 60 minutes or less
d) Aspergillus: 74.8% in 60 minutes or less

Manufacturers not providing the equivalent space kill rates shall not be acceptable. All manufactures requesting prior approval shall provide to the engineer independent test data from a NELEC accredited independent lab confirming kill rates and times meeting the minimum requirements stated in section 2.2 B, points 6a through 6d.

C. The bipolar ionization system shall operate in such a manner that equal amounts of positive and negative ions are produced. Single pole ion devices shall not be acceptable.

1. Airflow rates may vary through the full operating range of a VAV system. The quantity of air exchange shall not be increased due to the air purification system requirements.
2. Velocity Profile: The air purification device shall not have a maximum velocity profile.

D. Humidity: Plasma Generators shall not require preheat protection when the relative humidity of the entering air exceeds 85%. Relative humidity from 0 - 100%, condensing, shall not cause damage, deterioration or dangerous conditions to the air purification system.

E. Ionization Equipment Requirements:

1. Electrode Specifications (Bi-polar Ionization):

a. Each plasma generator with bipolar ionization output shall include the required number of electrodes and power generators sized to the air handling equipment capacity.
b. Electrodes shall be energized when the main unit disconnect is turned on and the fan is operating.
c. Ionization output when tested in the occupied space shall be between 500 and 800 ions/cm3.
d. Manufacturer shall demonstrate that no voltage potential exists due to exposed electrical components in the duct system or plenum. Exposed needles protruding into the air steam will not be accepted.

2. Certifications

a. Bipolar ionization units shall be tested and listed by either UL or ETL according to UL Standard 867 – Electrostatic Air Cleaners. UL listings for standards other than 867 will not be acceptable.
b. The operation of the electrodes or bipolar ionization units shall conform to UL 867 with respect to ozone generation.

F. Electrical Requirements:

1. Ion generators shall contain a built-in power supply and operate on 24V AC and shall connect to the fan and common terminals of the air handling unit served. Ion generators requiring a loose 24V, 120V or 230V transformer or power supply shall not be accepted.
2. Wiring, conduit and junction boxes shall be furnished and installed by the electrical contractor within housing plenums and shall be UL and NEC NFPA 70 approved.

G. Control Requirements:

1. All plasma ion generators shall include internal short circuit protection, overload protection, and automatic fault reset. Manual fuse replacement shall not be accepted.

2. All BAR and 7000 series plasma ion generators shall include an external BMS interface to indicate ion generator status and alarm.

PART 3 – EXECUTION

3.1 GENERAL

A. The Contractor shall be responsible for maintaining all air systems until the owner accepts the building (Owner Acceptance).

3.2 ASSEMBLY & INSTALLATION: PLASMA GENERATOR WITH BI-POLAR IONIZATION

A. All equipment shall be assembled and installed with a high level of workmanship to the satisfaction of the owner, architect and engineer.

B. Any material damaged by handling, water or moisture shall be replaced by the mechanical contractor at no cost to the owner.

C. All equipment shall be protected from damage on a daily basis throughout construction.

3.3 COMMISSIONING & TRAINING

A. A manufacturer's authorized representative shall provide start-up supervision and training of owner's personnel in the proper operation and maintenance of all equipment.

B. Provide to the owner a portable hand held ion counter with a calibrated range of 0 to 20,000 ions/cm3 and an accuracy of +/- 25% within the specified range. Ion counter shall have automatic zeroing capability on 10 minute intervals.

AIR DISTRIBUTION

GENERAL:
Furnish and install all ducts for Air Conditioning, Heating and Ventilating System as shown on the plans and as may be required to provide complete system. Ductwork shall be complete with grilles, vanes, flashings, hangers, flexible connections at equipment (A.H.U.'s, etc.,), splitters, manual dampers, reinforcing angles, etc. All ductwork shall be concealed and insulated as hereinafter specified. H.V.A.C. shall be constructed in accordance with N.F.P.A 101:9.2. All materials furnished in this section shall be submitted for approval prior to any installation.

ALL RECTANGULAR DUCTWORK SIZES INDICATED ON DRAWINGS ARE METAL-TO-METAL OUTSIDE DIMENSIONS.

DUCT HANGERS AND SUPPORTS:
All ductwork shall be properly braced to prevent rattling, breathing or other unnecessary noise. No sharp edges or obstructions shall project into the air stream. (1" wide x 16 gauge minimum)

LOW PRESSURE RECTANGULAR DUCTWORK:
All ductwork shall be galvanized steel and shall be of gauges and construction as recommended by ASHRAE Guide and Data Book. Gauges are as follows, with longest side governing. (Duct dimensions on Plans are metal-to-metal dimensions).

Dimensions of longest side	Sheet Metal Gauge
0"-12"	26 Gauge
13"-30"	24 Gauge
31"-54"	22 Gauge
55"-84"	20 Gauge

All ductwork shall be sealed at seams and joints as herein specified.

Joints and reinforcing shall be as per ASHRAE Guide and Data Book and all slips shall be installed without edge of internal part of slip facing downstream.

Construction standards of Article 110 of the National Board of Fire Underwriters, Bulletin 90, latest edition, shall apply throughout.

All ducts shall be straight and true and installed in a neat and workmanlike manner.

All edges shall be straight and true, and all bends shall be made with vaned turns. Where long radius turns cannot be used, the Contractor shall use square turns and use air splitters spaced not more than 3" center to center, and of a length so air will be properly distributed over the ducts.

DUCTWORK SEALANT:
All ductwork shall be air tight. All seams, both shop made and field installed, and shall be sealed with United McGill Uni-Seal, Hardcast SG-404 or 3M 800 Solvent Based Duct Sealer. All transverse joints shall be sealed as well as spin collar takeoffs and rough duct connections. Strict adherence to manufacturers installation instruction is required. Submit duct sealer as specified.

DUCT LINING:
All rectangular supply and return air ductwork, shall be internally lined with 1" thick black neoprene coated glass fiber duct lining material with a minimum 1-1/2# density and a thermal conductance factor of not more than .24 BTU per hour per square foot, per degree F. Lining material shall be in accordance with the requirements of NAIMA Duct Liner Standards and SMACNA HVAC Duct Construction Standards.

Lining material to be made by Certainteed, Owens Corning, Knauf or Johns Mansville. The Sheet Metal Contractor shall exercise care in cutting and fitting lining material to interior of duct. Cuts should be sharp and clean, with joints, and should fit tight. Lining material is to be applied by buttering on back and edges of sheets with 1/8" thickness waterproof duct lining cement meeting the requirements of ASTM C 916. The cement is to be applied with a serrated trowel or similar tool so that a grooved application of cement results.

Lining material is to be further secured in place with mechanical insulation fasteners (impact driven or weld secured) at 12" to 18" centers. These fasteners shall run from inside of duct through lining material and into rectangular sheet metal caps held in place against inside face of lining material. Mechanical fasteners shall be installed assuring no greater than 10% compression of the lining thickness.

DUCT ACCESSORIES:
Dampers of the fusible link operated type (2 hour rated) shall be provided in all ductwork passing through the floor or firewalls. In all cases, the time rating of damper shall be equal to or greater than the time rating of the wall.

Provide quadrant or adjustable splitters and mark shaft to give position of splitter damper in duct.

Provide vanes behind every supply grille or diffuser. Splitters shall be provided where shown on Plans and where located in concealed, non-accessible space, provide Young Regulators to operate splitter. Vanes shall be Tuttle and Bailey "Ducturns", Barber Coleman Uniflo or equivalent. Shop fabricated vanes will be acceptable. All dampers shall be constructed of 14 gauge steel.

DUCT ACCESS PANELS:
Access panel shall be Air Balance "Fire/Seal Access Door", Cesco "Duct Access Door" or equal. Door shall be 1" insulated type and shall be 24 gauge with 22 gauge frame. Booth door and frame shall be gasketed to provide air tight seal. Frame shall have notched knock-over edges for easy installation. Door shall have two (2) cam latches for locking purposes. Doors

shall be a minimum of 10"x12" installed where shown on plans. Round duct access panels shall be Greenheck Model RAD, Ruskin Model ADR or prior approved equivalent.

Access panel shall be installed adjacent to all Fire Dampers in supply ductwork. Minimum size shall be 18”x18”.

MANUAL DAMPERS:
Mechanical contractor shall furnish and install manual dampers at Multi-Zone Branch rectangular ductwork as indicated on plans. Damper shall be complete with outboard support bearing, and manual locking quadrant lever for balancing, blade and jamb seals. Dampers shall be aluminum low leakage opposed blade type as manufactured by Ruskin Model CD50 or approved equal for rectangular ductwork.

TEMPERATURE CONTROLS

GENERAL:
Provide modifications to an existing Direct Digital Control (DDC) temperature control system by Siemens in order to interact as necessary for set point control to be installed by the Mechanical Contractor.

Temperature Controls modifications shall be installed by Select Building Controls. Contact Barton Dupre (337-447-0481)(barton@selectbuildingcontrols.com) for pricing to be included in the total cost of the project.

Contractor shall remove existing controls associated with 3 existing Air Handling Units.

Modify existing graphics as required to accommodate new AHU Controls.

Contractor shall remove unnecessary control wiring and/or pneumatic control tubing. Cap pneumatic control tubing as required to maintain proper operation of existing HVAC control systems.

Contractor shall update graphics on Front End in Parker Hall.

Three (3) data jacks shall be installed as part of the project. Data Jacks are to be installed in Mechanical Room 146 adjacent to the existing control panels for existing AHU’s (1-2, 1-3, & 1-4). All other control wiring to complete the project shall be included in the scope of the project.

HAVC EQUIPMENT:
Points List:
Air Handling Unit 1-2 (3 Zone – Multi-Zone):

BO	Fan – Start/Stop
BI	Fan – Status (On/Off) and Alarm
AI	Entering Air Temperature (at AHU return duct)
AO	Chilled Water Coil – Control Valve with electronic actuator (2-Way)
AI	Leaving Air Temperature (Cold Deck Temperature)
AO	Hot Water Coil – Control Valve with electronic actuator (2-Way)
AI	Leaving Air Temperature (Hot Deck Temperature)
AI	Zone 1 - Leaving Air Temperature – Zone Duct Temperature
AI	Zone 2 - Leaving Air Temperature – Zone Duct Temperature
AI	Zone 3 - Leaving Air Temperature – Zone Duct Temperature
AO	Zone 1 – Discharge Air Mixing Damper Actuator (electronic)
AO	Zone 2 – Discharge Air Mixing Damper Actuator (electronic)
AO	Zone 3 – Discharge Air Mixing Damper Actuator (electronic)
BI	Entering Air Temperature – High Limit (Fire-Stat)
BI	Entering Air Temperature – Low Limit

BI Smoke Detector (AHU Shutdown)(3 per unit)(Three in Existing Supply Branches)
AI Zone 1 - Space Temperature Sensor (NO Adjustable dial or slide bar)
AI Zone 1 - Space Humidity Sensor (NO Adjustable dial or slide bar)
AI Zone 2 - Space Temperature Sensor (NO Adjustable dial or slide bar)
AI Zone 2 - Space Humidity Sensor (NO Adjustable dial or slide bar)
AI Zone 3 - Space Temperature Sensor (NO Adjustable dial or slide bar)
AI Zone 3 - Space Humidity Sensor (NO Adjustable dial or slide bar)

Sequence of Operation:

Air Handling Unit 1-2 (3 Zone – Multi-Zone):

A. START-UP:
AHU shall be Started and Stopped by the FMCS through the Local Control Panel through the HOA switch mounted in the cover of the existing fan motor starter.
The existing fan motor starter is located within the electrical room adjacent to the AHU Equipment Room.
One (1) Control Panel (ASC) shall be required per AHU. Spare Control Points in the ASC shall be for future expansion.
A Current Sensing Relay shall indicate Air Handling Unit fan Status back to the local ASC and place automatic controls in operation.

B. SAFETIES:
High limit thermostat (Fire-Stat) in the return located at the AHU shall stop the AHU fan upon detection of temperature above its set point.
Low Limit Thermostat in the mixed air stream at the AHU shall stop the AHU fan upon detection of temperature below its set point.
Duct mounted smoke detector(s) (total of 3) shall stop the AHU fan upon detection of products of combustion (Detectors in Supply Duct Branches).
Stopping the AHU fan shall de-energize the control system. The chilled water and hot water control valve(s) shall close to their respective coils.
An Alarm shall be sent to the workstation in Parker Hall upon activation of any or all safety devices.

C. TEMPERATURE CONTROL:
A temperature sensor downstream of the cooling coil shall transmit temperature changes to the local ASC. The ASC shall modulate the chilled water valve (2-way) to maintain cold deck temperature set point (52 degrees F – adjustable).
A temperature sensor downstream of the heating coil shall transmit temperature changes to the local ASC. The ASC shall modulate the hot water valve (2-way) to maintain hot deck temperature set point (85 degrees F – adjustable).
Duct mounted Temperature Sensor(s) (3) in the supply duct downstream of the AHU discharge shall transmit temperature changes to the local ASC. Zone branch duct(s) leaving air temperature shall be monitored by the ASC.
Space Temperature Sensor(s) (3 - 1 per zone) shall transmit temperature changes to the local ASC. The ASC shall modulate the discharge air zone mixing damper at the air handling unit to maintain space temperature setpoint (74 degrees F – adjustable).
Space temperature sensor shall have a temperature sensor only and no adjustable dial or slide shall be included on the device.

D. SPACE HUMIDITY MONITORING:
Space Humidity Sensor(s) (3 - 1 per zone) shall transmit Humidity changes to the local ASC. The ASC shall monitor space humidity for each zone.
An alarm shall be sent to the workstation in Parker Hall when the space humidity rises above set point (70%RH – Adjustable).
If space humidity exceeds adjustable high setpoint limit, ASC shall command the chilled water control valve to 100% full open to the cooling coil.

Points List:

Air Handling Unit 1-3 (5 Zone – Multi-Zone):

BO Fan – Start/Stop
BI Fan – Status (On/Off) and Alarm
AI Entering Air Temperature (at AHU return duct)
AO Chilled Water Coil – Control Valve with electronic actuator (2-Way)
AI Leaving Air Temperature (Cold Deck Temperature)
AO Hot Water Coil – Control Valve with electronic actuator (2-Way)

AI Leaving Air Temperature (Hot Deck Temperature)
AI Zone 1 - Leaving Air Temperature – Zone Duct Temperature
AI Zone 2 - Leaving Air Temperature – Zone Duct Temperature
AI Zone 3 - Leaving Air Temperature – Zone Duct Temperature
AI Zone 4 - Leaving Air Temperature – Zone Duct Temperature
AI Zone 5 - Leaving Air Temperature – Zone Duct Temperature
AO Zone 1 – Discharge Air Mixing Damper Actuator (electronic)
AO Zone 2 – Discharge Air Mixing Damper Actuator (electronic)
AO Zone 3 – Discharge Air Mixing Damper Actuator (electronic)
AO Zone 4 – Discharge Air Mixing Damper Actuator (electronic)
AO Zone 5 – Discharge Air Mixing Damper Actuator (electronic)
BI Entering Air Temperature – High Limit (Fire-Stat)
BI Entering Air Temperature – Low Limit
BI Smoke Detector (AHU Shutdown)(5 per unit)(Five in Existing Supply Branches)
AI Zone 1 - Space Temperature Sensor (NO Adjustable dial or slide bar)
AI Zone 1 - Space Humidity Sensor (NO Adjustable dial or slide bar)
AI Zone 2 - Space Temperature Sensor (NO Adjustable dial or slide bar)
AI Zone 2 - Space Humidity Sensor (NO Adjustable dial or slide bar)
AI Zone 3 - Space Temperature Sensor (NO Adjustable dial or slide bar)
AI Zone 3 - Space Humidity Sensor (NO Adjustable dial or slide bar)
AI Zone 4 - Space Temperature Sensor (NO Adjustable dial or slide bar)
AI Zone 4 - Space Humidity Sensor (NO Adjustable dial or slide bar)
AI Zone 5 - Space Temperature Sensor (NO Adjustable dial or slide bar)
AI Zone 5 - Space Humidity Sensor (NO Adjustable dial or slide bar)

Sequence of Operation:

Air Handling Unit 1-3 (5 Zone – Multi-Zone):

A. START-UP:
AHU shall be Started and Stopped by the FMCS through the Local Control Panel through the HOA switch mounted in the cover of the existing fan motor starter.
The existing fan motor starter is located within the electrical room adjacent to the AHU Equipment Room.
One (1) Control Panel (ASC) shall be required per AHU. Spare Control Points in the ASC shall be for future expansion.
A Current Sensing Relay shall indicate Air Handling Unit fan Status back to the local ASC and place automatic controls in operation.

B. SAFETIES:
High limit thermostat (Fire-Stat) in the return located at the AHU shall stop the AHU fan upon detection of temperature above its set point.
Low Limit Thermostat in the mixed air stream at the AHU shall stop the AHU fan upon detection of temperature below its set point.
Duct mounted smoke detector(s) (total of 5) shall stop the AHU fan upon detection of products of combustion (Detectors in Supply Duct Branches).
Stopping the AHU fan shall de-energize the control system. The chilled water and hot water control valve(s) shall close to their respective coils.
An Alarm shall be sent to the workstation in Parker Hall upon activation of any or all safety devices.

C. TEMPERATURE CONTROL:
A temperature sensor downstream of the cooling coil shall transmit temperature changes to the local ASC. The ASC shall modulate the chilled water valve (2-way) to maintain cold deck temperature set point (52 degrees F – adjustable).
A temperature sensor downstream of the heating coil shall transmit temperature changes to the local ASC. The ASC shall modulate the hot water valve (2-way) to maintain hot deck temperature set point (85 degrees F – adjustable).
Temperature sensor(s) (5) in the supply duct downstream of the AHU discharge shall transmit temperature changes to the local ASC. Zone branch duct(s) leaving air temperature shall be monitored by the ASC.

Space Temperature Sensor(s) (5 - 1 per zone) shall transmit temperature changes to the local ASC. The ASC shall modulate the discharge air zone mixing damper at the air handling unit to maintain space temperature setpoint (74 degrees F – adjustable). Space temperature sensor shall have a temperature sensor only and no adjustable dial or slide shall be included on the device.

D. SPACE HUMIDITY MONITORING:
Space Humidity Sensor(s) (5 - 1 per zone) shall transmit Humidity changes to the local ASC. The ASC shall monitor space humidity for each zone.
An alarm shall be sent to the workstation in Parker Hall when the space humidity rises above set point (70%RH – Adjustable). If space humidity exceeds adjustable high setpoint limit, ASC shall command the chilled water control valve to 100% full open to the cooling coil.

Points List:

Air Handling Unit 1-4 (Single Zone):

BO Fan – Start/Stop
BI Fan – Status (On/Off) and Alarm
AI Entering Air Temperature (at AHU return duct)
AO Chilled Water Coil – Control Valve with electronic actuator (2-Way)
AO Hot Water Coil – Control Valve with electronic actuator (2-Way)
AI Leaving Air Temperature (Downstream of AHU Discharge)
BI Entering Air Temperature – High Limit (Fire-Stat)
BI Entering Air Temperature – Low Limit
BI Smoke Detector (AHU Shutdown)(1 per unit)(One in Existing Supply Duct)
AI Space Temperature Sensor (NO Adjustable dial or slide bar)
AI Space Humidity Sensor (NO Adjustable dial or slide bar)

Sequence of Operation:

Air Handling Unit 1-4 (Single Zone):

A. START-UP:
AHU shall be Started and Stopped by the FMCS through the Local Control Panel through the HOA switch mounted in the cover of the existing fan motor starter.
The existing fan motor starter is located within the electrical room adjacent to the AHU Equipment Room.
One (1) Control Panel (ASC) shall be required per AHU. Spare Control Points in the ASC shall be for future expansion.
A Current Sensing Relay shall indicate Air Handling Unit fan Status back to the local ASC and place automatic controls in operation.

B. SAFETIES:
High limit thermostat (Fire-Stat) in the return located at the AHU shall stop the AHU fan upon detection of temperature above its set point.
Low Limit Thermostat in the mixed air stream at the AHU shall stop the AHU fan upon detection of temperature below its set point.
Duct mounted smoke detector shall stop the AHU fan upon detection of products of combustion (Detector in Supply Duct).
Stopping the AHU fan shall de-energize the control system. The chilled water and hot water control valve(s) shall close to their respective coils.
An Alarm shall be sent to the workstation in Parker Hall upon activation of any or all safety devices.

C. TEMPERATURE CONTROL:
A Space Temperature Sensor shall transmit temperature changes to the local ASC. The ASC shall modulate the chilled water valve (2-way) or the hot water valve (2-way) to maintain space temperature set point (74 degrees F – adjustable).
Space temperature sensor shall have a temperature sensor only and no adjustable dial or slide shall be included on the device.
A Duct mounted temperature sensor downstream of the Ahu discharge shall transmit temperature changes to the local ASC. The ASC shall monitor the AHU Leaving Air Temperature.

D. SPACE HUMIDITY MONITORING:
Space Humidity Sensor shall transmit Space Humidity changes to the local ASC. The ASC shall monitor space humidity.
An alarm shall be sent to the workstation in Parker Hall when the space humidity rises above set point (70%RH – Adjustable).

De-Humidification Mode: The ASC shall modulate the chilled water valve and hot water valve in a humidity control sequence of operation to reduce space humidity to an acceptable level (60% RH – adjustable). Chilled water valve shall open to the cooling coil, and hot water valve shall modulate to maintain space temperature setpoint.

CONTROL WIRING:
All wiring required in the control systems, including electrical connections for the sensors, thermostats, fire-stats, smoke detectors, etc. and all interlocking motor control wiring shall be furnished and installed by the Mechanical Contractor.

All wiring shall be in conduit and in accordance with the National Electrical Code (N.E.C.).

All control wiring located outdoors shall be installed in rigid or intermediate metal conduit.

All control wiring located indoors where an accessible ceiling is not available shall be installed in E.M.T. conduit.

All control wiring located above accessible ceilings shall be N.E.C. approved cable. All control wiring located above accessible ceilings used as air plenums shall be N.E.C. approved "plenum cable".

All conductors shall be copper. Conductors used for power circuits shall be #12 TW minimum. Conductors used for control circuits shall be #14 TW minimum. Conductors used for sensor circuits shall be #18 TW minimum.

Testing, Adjusting, and Balancing

GENERAL

RELATED DOCUMENTS:
All specification sections, drawings, and general provisions of the contract apply to work of this section, as do other documents referred to in this section.

SCOPE OF WORK:
The Contractor shall obtain the services of an independent Test and Balance (TAB) Company which specializes in the testing, adjusting, and balancing of heating, ventilating and air conditioning (HVAC) systems to test, adjust and balance all HVAC systems as indicated on drawings.

BASE BID: TAB Contractor shall Test and Record existing air flow for each supply duct prior to any demolition work (AHU 1-2: Three (3) Supply Ducts on Multi-Zone Unit) (AHU 1-3: Five (5) Supply Ducts on Multi-Zone Unit) (AHU 1-4: One (1) Supply Duct on Single Zone Unit).

BASE BID: TAB Contractor shall Test, Adjust, and Balance air flow for each supply duct after AHU installation is completed (AHU 1-2: Three (3) Supply Ducts on Multi-Zone Unit) (AHU 1-3: Five (5) Supply Ducts on Multi-Zone Unit) (AHU 1-4: One (1) Supply Duct on Single Zone Unit).

BASE BID: TAB Contractor shall furnish to Owner a quantity of two (2) TSI-ALNOR Model EBT731 Capture Hoods complete with Capture Hood base, poles, frame, and fabric; Micromanometer; 6 support poles; 4 AA rechargeable NiMH batteries; 2 battery holders; Multi-Country AC power adaptors; 46 cm (18") pitot tube; 5.0m (16 feet tubing; 2 static pressure probes; Neck Strap; Wheeled Carrying case; LogDat CH downloading software with cable; User Manual; Calibration Certificate, pressure: 5-Points (Differential), 3-Points (Barometric, 3-Points (Temperature): and Calibration Certificate, Flow: 7-Points (supply), 7-Points (Return).

ALTERNATE No.3: TAB Contractor shall Test, Adjust, and Balance all supply grilles/outlets in supply duct system as indicated on Drawing Sheet M3. As directed by Owner, TAB Contractor shall revisit the project site (within six (6) months) and adjust air flow in specific rooms in order to adjust for occupancy requirements.

The work included in this section consists of furnishing labor, instruments, and tools required in testing, adjusting and balancing the HVAC systems as described in these specifications or shown on accompanying drawings. Services shall include

checking equipment performance, taking the specified measurements, and recording and reporting the results. The testing, adjusting and balancing agency shall act as a reporting agency; that is, list and report each piece of equipment as to identification number, manufacturer, model number, serial number, proper location, specified performance, and report actual performance of all equipment as found during testing. The report is intended to be used during the life of the building as a ready reference indicating original conditions, equipment components, etc.

Representatives of the Test and Balance Company shall visit the job site during installation of the HVAC equipment, piping and ductwork as required.

Upon completion of the HVAC system installation, the Test and Balance Company shall perform all required testing and balancing with the full cooperation of the Contractor and his Sub-contractors. The Contractor shall make changes and/or adjustments to the HVAC system components that are required by the Test and Balance Company to accomplish proper balancing. The TAB agency shall not supply or install any materials or balancing devices such as pulleys, drives, belts, etc. All of this work is by the Contractor and shall be performed at no additional cost to the Owner.

The test and balance report complete with a summary page listing all deficiencies shall be submitted to the Owner for review. If the Owner agrees with the report, he shall sign it and return it to the Contractor. The test and balance report must be complete and must be accepted by the Owner prior to acceptance of the project. Any outstanding test and balance items shall be placed on the punch list and a monetary value shall be assigned to them.

After all deficiencies have been corrected the Owner shall sign the testing and balancing report, and the Test and Balance Company shall supply four (4) copies of the final and complete report to the Architect for inclusion in the Operation and Maintenance Manuals.

The items requiring testing, adjusting, and balancing include (but are not restricted to) the following:

AIR SYSTEMS:
Supply Fan AHU
Zone branch and main ducts
Diffusers, Registers, Grilles and Dampers
Coils (Air Temperatures)
Valves

DEFINITIONS, REFERENCES, STANDARDS:
All work shall be in accordance with the latest edition of the Associated Air Balance Council (AABC) National Standards or the latest standards of the National Environmental Balancing Bureau (NEBB). If these contract documents set forth more stringent requirements than the AABC National Standards or the NEBB Standards, these contract documents shall prevail.

QUALIFICATIONS:
Agency Qualifications: The TAB Agency shall be a current member of the AABC or the NEBB and have been established a minimum of five years and have completed projects of this size.

SUBMITTALS:
Procedures and Agenda: The TAB agency shall submit the TAB procedures and agenda proposed to be used.

Sample Forms: The TAB agency shall submit sample forms, which shall include the minimum data required by the AABC National Standards or the NEBB Standards.

TAB PREPARATION AND COORDINATION:
Shop drawings, submittal data, up-to-date revisions, change orders, fan curves, pump curves and other data required for planning, preparation, and execution of the TAB work shall be provided from the contractor when available and no later than 30 days after the Designer has returned the final approved submittal data to the Contractor.

System installation and equipment startup shall be complete prior to the TAB agency's being notified to begin.

The building control system (BCS) contractor shall provide and install the control system, including all temperature, pressure and humidity sensors. These shall be calibrated for accurate control. If applicable, the BCS contractor shall install all necessary computers and computer programs, and make these operational. Assistance shall be provided as required for reprogramming, coordination, and problem resolution.

All test points, balancing devices, identification tags, etc., shall be accessible and clear of insulation and other obstructions that would impede TAB procedures.

Qualified installation or startup personnel shall be readily available for the operation and adjustment of the systems. Assistance shall be provided as required for coordination and problem resolution.

REPORTS:
Final TAB Report - The TAB agency shall submit the final TAB report for review by the Owner. On plans provided, all outlets, devices, HVAC equipment, etc., shall be identified (including manufacturer, model number, serial number, motor manufacturer, HP, drive type, fan and motor sheaves and belt number), along with a numbering system corresponding to report unit identification. The TAB agency shall submit an AABC "National Project Performance Guaranty" (or similar NEBB Guaranty) assuring that the project systems were tested, adjusted and balanced in accordance with the project specifications and AABC National Standards (or similar NEBB Standards). The Designer shall certify his approval on the Performance Guaranty.

Submit 4 copies of the Final TAB Report to the Owner for inclusion in the Operation and Maintenance Manuals.

INSTRUMENTATION:
All instruments used for measurements shall be accurate and calibrated. Calibration and maintenance of all instruments shall be in accordance with the requirements of AABC National Standards (or similar NEBB Standards).

EXECUTION

GENERAL:
The specified systems shall be reviewed and inspected for conformance to design documents. Testing, adjusting and balancing on each identified system shall be performed. The accuracy of measurements shall be in accordance with AABC National Standards (or similar NEBB Standards). Adjustment tolerances shall be + or - 10% unless otherwise stated.

Equipment settings, including manual damper quadrant positions, valve indicators, fan speed control levers, and similar controls and devices shall be marked to show final settings.

All information necessary to complete a proper TAB project and report shall be per AABC or NEBB standards unless otherwise noted. The descriptions of work required, as listed in this section, are a guide to the minimum information needed.

TAB contractor shall cut insulation, ductwork and piping for installation of test probes to the minimum extent necessary to allow adequate performance of procedures. Upon completion, patch insulation, ductwork and housings using materials identical to those removed. Seal insulation to reestablish integrity of the vapor barrier.

TAB work shall include additional inspection and adjustment of components during the season following the initial balance to include re-balance of any items influenced by seasonal changes or as directed by the Owner.

AIR SYSTEMS:
The TAB agency shall verify that all ductwork, splitters, extractors, dampers, grilles, registers, and diffusers have been installed per design, are functional and set full open. Any leakage in the ductwork shall be repaired prior to the test. The TAB agency shall perform the following TAB procedures in accordance with the AABC National Standards or NEBB Standards:

For supply fans and A/C Units:

1. Fan speeds - Test and adjust fan RPM to achieve design CFM requirements.

2. Current and Voltage - Test and record each motor line voltage and amperage. Compare data with the nameplate limits to ensure motors are not in or above the service factor, are not excessively below FLA, or are not operating with a line voltage exceeding required tolerances. Make corrections as deemed necessary by Engineer.

3. Pitot-Tube Traverse - Perform a Pitot-tube traverse of main supply and return ducts, as applicable to obtain total CFM. If a Pitot-tube traverse is not practical, an explanation of why a traverse was not made must appear on the appropriate data sheet.

4. Outside Air - Test and adjust the outside air on applicable equipment using a Pitot-tube traverse. If a traverse is not practical, an explanation of why a traverse was not made must appear on the appropriate data sheet. If a traverse is not practical use the mixed-air temperature method if the inside and outside temperature difference is at least 20 degrees Fahrenheit or use the difference between Pitot-tube traverses of the supply and return air ducts.

5. Static Pressure - Test and record system static pressure, including the static pressure profile of each supply fan.

6. Adjust and verify proper operation of variable frequency drives for VAV air handling units.

7. Adjust and verify proper operation of electric heating coils including k.w. ratings for each stage of heating.

For zone, branch and main ducts:

1. Adjust ducts to within design CFM requirements. As applicable, at least one zone balancing damper shall be completely open. Multi-diffuser branch ducts shall have at least one outlet or inlet volume damper completely open.

For diffusers, registers and grilles:

1. Tolerances - Test, adjust, and balance each diffuser, grille, and register to within 10% of design requirements. Minimize drafts. Include required CFM, initial test CFM and final CFM.

2. Identification - Identify the type, location, and size of each grille, diffuser, and register. This information shall be recorded on air outlet data sheets.

For coils:

1. Air Temperature - Once air flows are set to acceptable limits, take wet bulb and dry bulb air temperatures on the entering and leaving side of each cooling coil. Dry-bulb temperature shall be taken on the entering and leaving side of each heating coil. Outdoor temperature shall be included in report at time of testing.

ADDITIONAL TAB SERVICES:

Job Site Inspections:

During construction, the TAB agency shall inspect the installation of pipe systems, sheet metal work, temperature controls, and other component parts of the HVAC systems as required.

Verification of HVAC Controls:

The TAB agency shall be assisted by the building control systems Contractor in verifying the operation and calibration of all HVAC and temperature control systems. The following tests shall be conducted:

1. Verify that all control components are installed in accordance with project requirements and are functional, including all electrical interlocks, damper sequences, air and water resets, fire and freeze stats, and other safety devices.

2. Verify that all controlling instruments are calibrated and set for design operating conditions.

Temperature Testing:

To verify system control and operation, a series of three temperature tests shall be taken at approximately two hour intervals in each separately controlled zone. The resulting temperatures shall not vary more than two degrees Fahrenheit from the thermostat or control set point during the tests. Outside temperature and humidity shall also be recorded during the testing periods.

TAB Report Verification:

At the time of final inspection, the TAB agency may be required to recheck, in the presence of the owner's representative, specific and random selections of data, air quantities, and air motion recorded in the certified report. Points and areas for recheck shall be selected by the owner's representative. Measurements and test procedures shall be the same as approved for the initial work for the certified report. Selections for recheck, specific plus random, will not exceed 10% of the total number tabulated in the report.

END OF SECTION

HVAC SYSTEM DUCT CLEANING

Scope of Work:
ALTENATE No.1: Contractor shall clean and internally coat ALL Supply Ductwork and Supply Grilles as indicated on drawing sheets M3. This work shall be included in pricing under Alternate No.1.
ALTENATE No.2: Contractor shall clean and internally coat ALL Return Ductwork and Return Grilles as indicated on drawing sheets M4. This work shall be included in pricing under Alternate No.1.
Provide HVAC System Duct cleaning and interior coating for the HVAC Systems in Dupre Library. All work shall be completed in accordance with standards and guidelines from the National Air Duct Cleaners Association (NADCA), the Environmental Protection Agency (EPA) and the Indoor Air Quality Association (IAQA). A project manager holding both a Certified Air Duct Cleaning Specialist and a Certified Indoor Environmentalist designation shall conduct project oversight.
The following are the tasks to be performed:

Cleaning of Components	Supply Grilles with Internal Damper Mechanism
Cleaning of Components	Return Grilles
Cleaning of Components	Interior Lined Metal Duct (Supply and Return)
Installation of Access Plates	Interior Lined Metal Duct (Supply and Return)
Fosters Fungicidal Treatment	Interior Lined Metal Duct (Supply and Return)
Apply BBJ Sanitizer	Supply Grilles With Internal Damper Mechanism
Apply BBJ Sanitizer	Return Grilles

Task Specifications:

Supply & Return Grilles:

A grille is attached to the branch supply and/or return duct system.

Cleaning of Components

The grilles shall be removed from the branch duct connection. The duct connection shall be HEPA vacuumed, then prepared to control cross contamination. The cleaning shall be conducted with high-efficiency negative air machines that filter 99.97% of particles down to .3 microns to prevent cross-contamination and capture particulate. Grilles shall be cleaned with a mild mixture of alkali cleaning solution applied to the grilles followed by hand brushing and rinsing thoroughly with water, then dried.

Apply BBJ Sanitizer

Metal components and non-porous surfaces shall be treated with a sanitizer in order to kill microbiological growth. BBJ Biocide shall be used as the sanitizing agent. The sanitizer shall be registered by the EPA (#67212-1) for the sanitization and deodorization of ventilation systems and air conditioning ductwork.

Supply & Return Grilles with Internal Damper Mechanism:

Directly behind the face of the grille is a secondary damper assembly that is used to control airflow. These assemblies require special attention to remove microbiological growth and prevent cross contamination.

Cleaning of Components

The grille and secondary damper assembly shall be removed from the branch duct system. The branch duct shall be HEPA vacuumed, then prepared to control cross contamination. The cleaning shall be conducted with high-efficiency negative air machines that filter 99.97% of particles down to .3 microns to prevent cross-contamination and capture particulate. Grilles shall be cleaned with a mild mixture of alkali cleaning solution applied to the grilles followed by hand brushing and rinsing thoroughly with water, then dried.

Apply BBJ Sanitizer

Metal components and non-porous surfaces shall be treated with a sanitizer in order to kill microbiological growth. BBJ Biocide shall be used as the sanitizing agent. The sanitizer shall be registered by the EPA (#67212-1) for the sanitization and deodorization of ventilation systems and air conditioning ductwork.

Interior Lined Metal Duct (Supply and Return):

Ductwork with or without an interior fiberglass duct liner shall be cleaned using industry accepted "non-aggressive" techniques so as not to dislodge or erode the duct lining fibers. Part of the Duct System includes 3 Control Boxes that will require similar cleaning as ducts.

Cleaning of Components

Ducts shall be accessed through service openings or fabricated openings provided by the contractor. (Note: The Owner will provide openings in duct chases to gain access to the duct systems). The duct access openings shall allow maximum closure strength and preserve the structural integrity of the duct system. HEPA-filtered contact vacuuming shall be used extensively to insure that the compressed fiberglass matrix has been cleaned to the deepest level possible. The cleaning shall be conducted with high-efficiency negative air machines that filter 99.97% of particles down to 0.3 microns to prevent cross-contamination and capture particulate. National standards shall be strictly adhered to. Rotating brushes and air whip tools shall be utilized only when coatings or resurfacing products are applied since these tools can damage lined duct systems. Ductwork shall be resealed using a method that exceeds all current closure standards. All Control Boxes shall be opened and completely cleaned similar to duct cleaning requirements.

Installation of Access Plates

Closures are made using metal galvanized insulated or non-insulated plates. The plates are fabricated of a gauge (thickness) metal, which is equal to or greater than the gauge it is applied to. Plates are sized 1" larger than the access opening and secured with self-tapping screws. Foil metallic tape (not duct tape) is then applied over the seam. Mastic is applied to the tape, plate and duct, further strengthening the closure. These closures are designed to be permanent. This procedure allows the system to be re-energized at the end of the work cycle without air leakage occurring. This closure method requires additional labor and materials. Therefore, bid differences may be reflected here.

Fosters Fungicidal Treatment

Foster fungicidal protective coating 40-20 shall be applied to the internal lined duct surfaces. Foster 40-20 has specific EPA registration (#63836-1) for application to fiberglass lined ductwork. This registration is for the entire coating product, rather than just the active ingredient. Using the ASTM E 84 standards, Foster 40-20 meets NFPA90A and 90B 25/50 requirements. The product shall be applied at a square foot coverage rate, which exceeds manufacturer's specifications. Foster 40-20 shall be used to increase control of microbial growth and to repair fraying or eroding fiberglass surfaces.

Safety:

Contractor shall be properly trained in lock-out/tag-out, MSDS, hazardous communications, safety, respirators, ladders, and other job-related issues.

END OF MECHANICAL SECTION

SECTION 260001 - ELECTRICAL GENERAL PROVISIONS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions as appropriate, apply to the Work specified in this Section.

A. Refer to all Electrical Divisions of the Specifications as well as the Specifications for the other various trades and materials and be thoroughly familiar with all provisions regarding electrical work.

1.2 BIDDING REQUIREMENTS AND RESPONSIBILITIES

A. Prime bidder is responsible for all work, of all trades and sub-contractors bidding this project. It is the prime bidders responsibility, prior to submitting a bid to ensure that subcontractors coordinate all aspects of the work between trades, sub-contractors, etc. to the fullest extent possible.

B. Prime bidder shall ensure that all sub-contractors, suppliers, equipment vendors, etc., obtain all necessary and pertinent contract document information pertaining to their work prior to the submission of a bid. Contractor shall realize that different sub-contractors may furnish equipment, accessories, devices, etc. necessary for a complete and working installation, that require provision of services by another sub-contractor or trade.

C. Bidders of all or any portions of this section or division are required to review all contract documents including but not limited to Architectural drawings, Structural drawings, Mechanical drawings, Plumbing drawings, Electrical drawings, etc. to coordinate requirements and responsibilities with and through prime bidder.

D. Bidders of all or any portions of this section or division, by furnishing a bid on a portion of the prime contract are indicating that they have received all contract documents and coordinated services provided under their portion of the work with the prime bidder; they are indicating that they have expressed any pertinent questions (which would result from a detailed, thorough review of the entire set of contract documents) to the prime bidder in accordance with the general provisions of the Specifications requirements, prior to bidding.

E. All timely, pertinent, questions provided in writing prior to bids, in accordance with the general provisions of the Specifications requirements, will be clarified, defined, or otherwise explained in a written addendum and/or addendums prior to bids, in accordance with the general provisions of the Specifications requirements.

F. It is not the intention of these contract documents to leave any issue relating to coordination between trades or sub-contractors vaguely defined. The intention is to define all issues, coordination matters, equipment requirements, sizes, routing, etc. to the satisfaction of the prime bidder, prior to receipt of bids.

G. Bidders of all or any portions of this section or division, by virtue of the submission of a bid to the prime bidder, are indicating that they have reviewed the entire set of contract documents with due diligence and regard for the Owner's desire for a comprehensive and complete bid proposal; that they have expressed all concerns or questions requiring clarification on matters of coordination between trades and/or sub-contractors; that they have expressed any such concerns or questions in writing in accordance with contract document’s General Provisions requirements.

H. Prime bidders, by submission of a comprehensive bid on the project are indicating that the subcontractors selected in their bid have complied with all contract document's General Provisions requirements, that they have indicated in writing, prior to bidding, all questions or concerns requiring clarification and/or explanation and have documented any and all specific exclusions involving work that would generally be considered to be work of their trade. The prime bidder shall coordinate all work so that anything excluded by the bidder of all or any portions of this section or division, have been addressed prior to bids in one of the following manners:

1. The work has been confirmed, by the prime bidder, to be work of another trade or subcontractor whose proposal is also being accepted.
2. Clarification of the matter has been made through the prime design professional via written addendum and is clearly and mutually understood by the prime bidder and the party raising the issue/question, or seeking clarification.
3. The work has been accepted as the responsibility of the prime contractor directly.

1.3 MATERIAL AND EQUIPMENT

A. The term "provide" when used in the Contract Documents includes all items necessary for the proper execution and completion of the work.

B. Specific reference in the Specifications to any article, device, product, material, fixture, form or type of construction by name, make or catalog number, shall be interpreted as establishing a standard of quality and shall not be construed as limiting competition; and the Contractor, in such cases, may at his option use any article, device, product, material, fixture, form or type of construction which in the judgement of the Architect expressed in writing is equivalent to that specified.

C. Coordinate and properly relate all work of this Division to building structure and work of all other trades.

D. Visit premises and become thoroughly familiar with existing conditions; verify all dimensions in field. Advise Architect of any discrepancies prior to Bid Date in accordance with contract document's General Provisions.

E. Do not rough-in for any item or equipment furnished by others or noted "Not in Contract" (NIC), without first receiving rough-in information or determining rough-in requirements from other trades and/or Architect.

F. Provide storage and protection for all equipment and materials in accordance with requirements of contract document's General Provisions.. Replace any equipment and materials damaged by improper handling, storage, or protection, at no additional cost to the Owner.

G. Keep premises clean in accordance with requirements of contract document's General Provisions.

1.4 SUBSTITUTIONS

A. Substitutions are allowed under La. R.S. 38:2291 and La R.S. 38:2292. Any requests for prior approval (as provided for under La. R.S. 38:2295) including any re-submitted data, shall be received by the Architect/Engineer a minimum of ten (10) working days prior to bid date. Submittals sent via facsimile and/or electronic mail will not be accepted. The Contractor shall recognize that it may be necessary to submit certain requests for prior approval sooner than the final date listed in the Instructions to Bidders, depending upon the complexity and completeness of the submittal. If, in the opinion of the Architect/Engineer, there is neither sufficient time available nor adequate descriptive data attached to the submittal, the submittal will not be considered. Except as otherwise specified, materials and equipment shall be new and bear the approval label of the Underwriters Laboratories, Inc. for the type of installation required.

B. Basis of design of systems is based on specific equipment for performance, size, shape, color, construction material, etc... If the use of other manufacturer's equipment, even though approved by Architect, involves additional cost due to space requirements, foundation requirements, increased mechanical or electrical services, the cost of such extra work shall be borne by the contractor. Even though a manufacturer's name appears in the Contract Documents as having acceptable equipment, his equipment shall be classified as being a substitute to the equipment originally designed for and named in the Contract Documents. Substitute equipment, materials, etc., will not be allowed to deviate from basis of design requirements.

C. All requests for prior approval shall identify where proposed material matches or exceeds the performance of the equipment specified. In addition, such submittal shall also clearly identify all deficiencies compared to specified product. Submittal of general cut sheets will be returned rejected.

1.5 DRAWINGS AND SPECIFICATIONS

A. The specific intent of these Contract Documents is to provide the various systems, equipment, etc. to the Owner complete and in a thoroughly calibrated and functional condition.

B. The Drawings shall not be construed as shop drawings. In the event of a possible interference with piping or equipment of another trade, items requiring set grade and elevations shall have precedence over other items. Should any major interference develop, immediately notify the Architect.

C. In laying out Work, refer to mechanical, electrical, structural, and architectural drawings at all times in order to avoid interference and undue delays in the progress of the Work.

1.6 CODES AND REGULATIONS

A. Work shall be in full accord with the LA State Sanitary Code, 2014 N.E.C. (NFPA 70), local ordinances, building codes, and other applicable national, state, and local regulations.

B. Equipment shall conform to requirements and recommendations of the National Bureau of Fire Underwriters and National Fire Protection Association (NFPA).

C. Items provided under this Division shall comply with the American National Standards Institute (ANSI) "Specifications for Making Buildings and Facilities Accessible to and Usable by Physically Handicapped People," ANSI A 117.1, and the Americans with Disabilities Act (A.D.A.).

D. Work called for in these Plans and Specifications shall be executed by competent workmen.

E. In the possible event of conflict between codes or regulations and Contract Documents, notify the Architect/Engineer immediately.

F. The drawings show approximate locations only of feeders, branch circuits, outlets, etc., except where specific routing or dimensions are indicated. The Architect reserves the right to make reasonable changes in locations indicated, before roughing-in, without additional cost to the Owner.

G. Because of the small scale of the drawings, it is not possible to indicate all of the offsets, fittings, and accessories required. The Contractor shall investigate the structural and finish conditions affecting his work and shall arrange such work accordingly, fittings, bends, junction boxes, pull boxes, access panels, and accessories required to meet such conditions at no additional costs to the Owner.

1.7 FEES, PERMITS, AND TAXES

A. Obtain and pay for permits required for the Work of this Division. Pay fees in connection therewith, including necessary inspection fees.

B. Pay any and all taxes levied for Work of this Division, including municipal and/or state sales tax where applicable.

1.8 MANUFACTURER'S DIRECTIONS

A. Install and operate equipment and material in strict accord with manufacturer's installation and operating instructions. The manufacturer's instructions shall become part of the Contract Documents and shall supplement Drawings and Specifications.

1.9 SUBMITTAL DATA

A. Submit shop drawings, project data, and samples in accordance with requirements of the General Provisions of the contract documents. Submittals shall be received no later than thirty (30) consecutive calendar days from effective date of "Notice to Proceed".

B. Shop drawings shall consist of published ratings or capacity data, detailed construction drawings for fabricated items, wiring and control diagrams, performance curves, installation instructions, manufacturer's installation drawings, and other pertinent data. Submit drawings showing revisions to equipment layouts due to use of alternate or substitute equipment.

C. Where manufacturers and suppliers of equipment, materials, etc. are unable to fully comply with Contract Document basis of design requirements, specifically call such deviations to attention of Architect/Engineer on submittals. Typed deviations on a separate sheet; underlined statements or notations on standard brochures, equipment fly sheets, etc. will not be accepted. Submittals shall clearly indicate where material submitted meets and/or exceeds the performance criteria of the equipment used as the
basis of design of the project. Failure to note compliance with the basis of design material/equipment shall result in rejection of submittals.

D. Approval of submittals shall not relieve Contractor from furnishing required quantities and verifying dimensions. In addition, approval shall not waive original intent of Contract Documents.

E. Failure to obtain written approval of equipment shall be considered sufficient grounds for rejection of said equipment regardless of the stage of completion of the project.

F. Contractor shall submit Submittals/Shop Drawings on all equipment listed below. In addition, contractor shall refer to subsequent sections of the Electrical portion of the specifications for additional shop drawing submittal requirements.

1. Lighting Fixtures
2. Electrical Gear (Panelboards, Transformers, Safety Switches, Circuit Breakers)
3. Dimmer Switches
4. Fire Detection and Alarm System
5. Receptacles
6. Toggle Switches
7. Wiring Device Box Support Brackets
8. Lamps
9. Tele/Data Systems
10. Cover Plates
11. Wire
12. Occupancy/Motion Sensors
13. Floor Boxes

G. Shop Drawings/submittals shall be submitted in individual books as grouped together and stated below and shall be submitted simultaneously. Electrical gear shop drawings shall not be submitted until

approval is obtained for all HVAC and plumbing equipment. Prior to submission of electrical gear shop drawings, contractor shall obtain a copy of the approved mechanical and plumbing submittals. Any modifications required to be made to the electrical gear due to changes in electrical requirements (increases and/or decreases) of the mechanical and plumbing equipment shall be clearly notated in the electrical gear submittals.

1. Light Fixtures, Lamps, and Occupancy/Motion Sensors
2. Electrical Gear
3. Tele/Data Systems
4. Fire Detection and Alarm System
5. Dimmer Switches, Receptacles, Toggle Switches, Cover Plates, Device Box Support Brackets, Pull Boxes, Floor Boxes, and Wire

1.10 PROJECT COORDINATION

A. Refer to applicable Electrical Specification Sections for products work of this Division.

B. Refer to all plumbing, mechanical and fire protections specifications sections for related products affecting work of these electrical sections.

C. Coordinate handling of all products, materials, etc., through the Contractor. Coordinate space, access, clearances, etc., through the Contractor prior to preparation of shop drawing submittal.

D. The Contractor is herein cautioned to note that the work involved is a complicated renovation and a new addition project requiring continuous owner occupancy. The Contractor should review the phasing plans/descriptions and visit the project site to determine existing conditions. The Contractor will be held responsible for allowing for these conditions in his bid.

1.11 SERVICE CONTINUITY

A. At all times during the construction of the project, electric service shall be maintained to all portions of the site and existing facility, except with prior written approval from the Architect/Engineer of interruptions. It shall be the responsibility of the contractor to provide, install and maintain (fuel included) any required rental generators to accomplish said task. Any required interruptions of electric service due to work being performed under this Contract shall be scheduled in writing a minimum of forty-eight (48) hours in advance after consultation with the Architect/Engineer and the Owner, and shall occur when permitted by the Architect/Engineer. The Contractor shall be responsible for any overtime pay required to meet these requirements, at no additional cost to the Owner.

1.12 VALUE ENGINEERING (V/E):

A. While it may be in the Owner's interest to consider the first cost money saving that may be generated via alternatives and options generated via participation in Value Engineering, contractor shall realize that substantive offers of Value Engineering (V/E), if accepted by the Owner, constitute a design-build agreement (offer and acceptance) with the owner, and drastically change the design concept of the project, as developed by the Professional of Record identified on the Contract Documents.

B. Should contractor offer, and the owner accept value engineering options that alter aspects of the system design, equipment, performance and/or performance verification or monitoring of respective systems, the contractor shall provide duly licensed professional engineering consultants working on behalf of the contractor (including sub-contractors and equipment vendors/manufacturers) to review, approve and take professional responsibility for performance and suitability of V/E hybrid systems, materials or operational changes related to respective V/E items. The contractor's licensed professional engineering consultants and the contractor assume any and all responsibility for the design and suitability in terms of performance, of hybrid systems installed, as contractor's Professional of Record, absolving the

original project Professional of Record (identified on the original Contract Documents, released for the original project Bid/Negotiation) from responsibility for the V/E hybrid systems portion of the work.

C. The contractor, via the offer and acceptance of value engineering items on the project agrees to provide professional engineering design services and take full and complete responsibility for the hybrid design. Further, the contractor's (V/E Items) professional of record (either employees, or independent consultants to the contractor) through the offer and acceptance of V/E items, agree to indemnify and hold harmless the project owner, the owner's original A/E team (Professional of Record on behalf of the owner for the original Contract Documents) their heirs and assigns in regard to the V/E changes and their impact on the systems altered, affected or modified, in whole or in part. The Professional of Record shown on the original Contract Documents in regard to the systems altered, adjusted, revised, modified or otherwise affected by the value engineering items implemented, shall be absolved of design responsibility as a result of implementation of V/E items, and their original use of Engineering Seals used for original Contract Documents, shall not apply.

1.13 PROJECT RECORD DOCUMENTS

A. Keep Project Record Documents in accordance with general provision requirements of the specifications.

B. During construction period, keep accurate records of installations paying particular attention to major interior and exterior underground and concealed piping, ductwork, etc.

C. The Contractor shall obtain a minimum of one (1) set of the contract documents including all addenda and change orders as prepared by the Architect/Engineer.

D. If the Contractor elects to vary from the Contract Documents and secures prior approval from the Architect/Engineer for any phase of the work, he shall record in a neat and readable manner all such variances on the contract documents in red ink. Prior to requesting substantial completion the marked-up set of contract documents shall be returned to the Architect/Engineer for approval.

E. All deviations from sizes, locations and from all other features of the installation shown in the Contract Documents shall be recorded.

F. In addition, it shall be possible using these drawings to correctly and easily locate, identify and establish sizes of all piping, directions, and the like, as well as other features of work which will be concealed underground and/or in the finished building.

G. Locations of underground work shall be established by dimensions to columns, lines or walls, locating all turns, etc. and by properly referenced centerline or invert elevations and rates of fall.

H. For work concealed in the building, sufficient information shall be given so it can be located with reasonable accuracy and ease. In some cases this may be by dimension. In others, it may be sufficient to illustrate the work on the drawings in relation to the spaces in the building near which it was actually installed. The decision of the Architect/Engineer in this matter will be final.

I. The following requirements apply to all Record Drawings:

1. They shall be maintained at the Contractor's expense.
2. All such drawings shall be done carefully and neatly.
3. Additional drawings shall be obtained at the Contractor's expense.
4. They shall be kept up-to-date during the entire course of the work and shall be available upon request for examination by the Architect/ Engineer and when necessary, by other trades, to establish clearances for other parts of the work.

5. Record Drawings shall be returned to the Architect/Engineer upon completion of the work and are subject to approval of the Architect/ Engineer.

1.14 OPERATION AND MAINTENANCE DATA

A. Refer to the specification Sections related to PROJECT CLOSEOUT or OPERATION AND MAINTENANCE DATA for procedures and requirements for preparation and submittal of maintenance manuals.

B. Provide the Owner with three (3) copies of printed instructions indicating various pieces of equipment by name and model number, complete with parts lists, maintenance and repair instructions and test and balance report.

C. COPIES OF SHOP DRAWINGS WILL NOT BE ACCEPTABLE AS OPERATION AND MAINTENANCE INSTRUCTIONS.

D. This information shall be bound in plastic hardbound notebooks with the job name, Architect and Engineer names permanently embossed on the cover. Rigid board dividers with labeled tabs shall be provided for different pieces of equipment. Submit manuals to the Architect for approval.

E. In addition to the operation and maintenance brochure, the Contractor shall provide a separate brochure which shall include registered warranty certificates on all equipment, especially any pieces of equipment which carry warranties exceeding one (1) year.

F. As part of the O & M binders, contractor shall include copies of all studies and test reports performed as part of this project, including but not limited to, the following:

1. Acceptance Testing Reports
    a. Thermographic Tests
    b. Torque Values
    c. Rotation Tests
2. Fire Alarm System 100% Test Report

G. The operation and maintenance brochure shall be furnished with a detailed list of all equipment furnished to the project, including the serial number and all pertinent nameplate data such as voltage, amperage draw, recommended fuse size, rpm, etc. The Contractor shall include this data on each piece of equipment furnished under this contract including but not limited to those items listed below.

1. Lighting Fixtures
2. Electrical Gear (Panelboards, Transformers, Safety Switches, Circuit Breakers)
3. Dimmer Switches
4. Fire Detection and Alarm System
5. Receptacles
6. Toggle Switches
7. Wiring Device Box Support Brackets
8. Lamps
9. Tele/Data Systems
10. Cover Plates
11. Wire
12. Occupancy/Motion Sensors
13. Floor Boxes

1.15 CUTTING AND PATCHING

A. Comply with requirements of the Specifications regarding cutting and patching. Locate and timely install sleeves as required to minimize cutting and patching.

B. Cutting, fitting, repairing, patching, and finishing of Work shall be done by craftsmen skilled in their respective trades. Where cutting is required, cut in such a manner as not to weaken structure, partitions, or floors. Holes required to be cut must be cut or drilled without breaking out around the holes. Where patching is necessary in finished areas of the building, the Architect will determine the extent of such patching and refinishing.

C. Repairing Roadways and Walks: Where this contractor cuts or breaks roadways or walks to lay the piping, he shall repair or replace these sections to match existing, unless specifically identified as the responsibility of others.

1.16 PAINTING

A. Painting shall be provided under the Specification section regarding painting, unless specified otherwise. Leave exposed piping, materials, and equipment clean and free of rust, grease, dirt, etc. before and after painting.

B. Factory finished equipment, fixtures, and materials which are marred, chipped, scratched, or otherwise unacceptable shall be repaired or replaced under this Division to Architect satisfaction, at no additional cost to Owner.

C. Coordinate all painting requirements with prime bidder prior to bids.

D. All exposed conduit, materials, hangers, anchors, etc., are to be primed and painted. Color shall match adjacent surfaces where not specifically designated otherwise. All galvanized materials shall be suitably treated prior to painting to ensure adhesion.

1.17 EXISTING CONDITIONS

A. The Electrical Contractor shall visit the building site to determine existing conditions and will be held responsible for allowing for these conditions in his bid.

B. Note that this area of work will have storm drainage, mechanical and electrical utilities located underground and within and under the buildings. It is part of this work for the Contractor to determine the scope and location of all utilities to be installed with this project and arrange his work around others. There will be no extra consideration for work discovered as being hidden after the bid, and no change orders for extra cost that may be caused by unknown after bid conditions. The drawings show approximate locations only of feeders, branch circuits, outlets, etc., except where specific routing or dimensions are indicated. The Architect reserves the right to make reasonable changes in locations indicated, before roughing-in, without additional cost to the Owner.

1.18 PROTECTION OF APPARATUS

A. The Contractor shall take precautions necessary at all times to properly protect his apparatus from damage. Failure on the part of the Contractor to comply with the above to the Architect's satisfaction shall be sufficient cause for the rejection of the particular piece of apparatus in question.

1.19 MINOR DEVIATIONS

A. The Contractor shall realize that the drawings cannot delve into every step, sequence, or operation necessary for the completion of the project without drawing on the Contractor's experience. Only typical details are shown on the plans. In cases where the Contractor is not certain about the method of installation of his work, he shall ask for details. Lack of details will not be an excuse for improper installation.

1.20 SALVAGED MATERIALS

A. The Owner shall have priority for the selection of salvaged material and equipment. Any equipment, light fixtures, devices, ballasts, materials, etc. selected to remain property of the Owner shall be removed and delivered to a location on the site as designated by the Owner. Material and equipment not retained by the Owner shall become the property of this Contractor and shall be removed from the site by him.

B. The Contractor shall obtain written approval of all material and equipment determined not to be salvaged by the Owner.

1.21 SAFETY PRECAUTIONS

A. Work methods and project safety are the Contractor's sole responsibility.

B. Contractor shall furnish and place proper guards for prevention of accidents. He should provide and maintain any other necessary construction required to secure safety of life or property, including maintenance of sufficient lights during all day and night hours as required to secure such protection.

C. Temporary electrical services during construction should be maintained in perfect condition. Frayed, lose or opened connections should not be used for temporary services. The Contractor should use only equipment in first class working condition for construction services.

1.22 TEMPORARY CONSTRUCTION LIGHTING

A. The Contractor should provide and install construction lighting as required by General Contractor and other trades. The installation shall conform to requirements of the National Electrical Code.

1.23 SUPERVISION

A. Contractor shall personally, or through an authorized and competent representative, constantly supervise the work done from beginning to completion and final acceptance. To the best of his ability he shall keep the same foreman and workmen throughout the project duration. Foreman shall be present at project site at all times while work under this section of the contract documents is being performed. Foreman shall be accessible by cellular phone at all times. Respective telephone numbers shall be forwarded to Architect/Engineer prior to commencement of work on this project.

PART 2 - PRODUCTS

2.1 EQUIPMENT LABELS

A. Panelboards, safety switches, equipment cabinets, motor starters and other equipment shown on the drawings and furnished and/or installed under this section of the Specifications shall be labeled with laminated plastic nameplates inscribed to identify equipment with description shown on the drawings for panels, the name of the equipment controlled for motor starters or the system or function involved for other equipment. Provide typewritten panelboard directories indicating the equipment served and its location using final approved room numbers, etc., as directed by the Architect. Refer to specification section – Electrical Distribution System for additional requirements.

PART 3 - EXECUTION

3.1 COORDINATION OF TRADES

A. Where work is in close proximity to the work of other contractors, the Contractor shall review plans of other contractors and coordinate his work with theirs. The Electrical Contractor shall verify the location of lighting fixtures, beams, structural members, conduit, ductwork, pipes or other obstructions before beginning his work in the area. Notify the Architect where proper clearances do not occur or where the work of others would interfere with the safe and/or proper operation of this work.

3.2 HARMONIC DISTORTION

A. IEEE 519-1992 - Harmonic Control in Electrical Power Systems shall be a requirement of this project. Harmonic filters (passive or active), phase multiplication devices, or any other components required to mitigate harmonic voltage THD to 5% and current THD to
8% maximum levels shall be an integral part of the VFD system. Compliance measurement shall be based on THD added (during VFD full load operation compared to across-the-line operation) at the VFD circuit breaker terminals or actual THD measurement at the VFD circuit breaker terminals during full load VFD operation. Designs which employ shunt tuned filters must be designed to prevent the importation of outside harmonics which could cause system resonance or filter failure. Calculations supporting the design, including a system harmonic flow analysis, must be provided as part of the submittal process for shunt tuned filters. Any filter designs which cause voltage rise at the VFD terminals must include documentation in compliance with the total system voltage variation of plus or minus 10%. Documentation of Power Quality compliance shall be part of the commissioning required by the VFD supplier. Actual job site measurement testing shall be conducted at full load and documented in the operation and maintenance manuals. Harmonic measuring equipment utilized for certification shall carry a current NiTS calibration certificate. The final test report shall be reviewed and compliance certification stamped by a licensed professional engineer (PE).

3.3 SUPPORTS AND FOUNDATIONS

A. Support all items covered by this Specification directly from building structural members independent of any ceilings or any other installed item. Panelboards and switches may be attached to suitably reinforced walls. Ground or slab mounted equipment shall be mounted on a separate four inch high concrete slab. Extending 6" beyond equipment footprint on all sides

B. Do not attach items of this Specification to HVAC ductwork, ceiling grids and ceiling support members, piping or other equipment unless specifically shown otherwise. Where applicable, all equipment including conduit shall be supported from overhead wall, floor or roof structures using galvanized channel or angle members for a rigid support. Position supports and equipment such that access through lay-in ceilings or panels is not impaired and all Code required clearances are maintained.

C. Where applicable, under no circumstances is the Contractor to attach to or support from any bar joist bridging. Any supports to the bar joists or any structural systems shall be approved by the Architect. All supplemental angle or channel iron required to support equipment of this Specification shall be furnished by the Electrical Contractor.

3.4 EQUIPMENT LAYOUT

A. The physical location and arrangements of electrical equipment is shown on the Plans and is to be used by the Contractor as a guideline in construction. It is the responsibility of the Contractor to review the Plans with the proposed equipment and equipment of other contractors that are affected, and to ensure that all Code required clearances, wiring distances and maintenance accesses, including equipment heights, of all items are maintained. Alternate arrangements to accomplish the above due to field conditions or changes in physical size of the equipment proposed for the project are to be submitted to the Architect for review before any work is begun or equipment ordered.

B. All electrical gear arrangements shall be presented in a 1/4 inch scaled drawing showing all equipment, including those of other contractors. This includes all electrical rooms, mechanical rooms, mechanical yards, electrical yards, service platforms, boiler rooms, etc… Include shop drawing cut sheets and applicable information. Indicate on the drawing by dimension all required Code clearances, wiring distances and maintenance access requirements. Where equipment heights are required to be coordinated with architectural or other items, indicate revised heights. Refer to "MOUNTING HEIGHTS."

3.5 GUARANTEE

A. The Contractor shall guarantee all materials, equipment and workmanship for a period of one (1) year from the date of final acceptance of the project. This guarantee shall include furnishing of all labor

and material necessary to make any repairs, adjustments or replacement of any equipment, parts, etc. necessary to restore the project to first class condition. This guarantee shall include the replacement of lamps. Warranties exceeding one (1) year are hereinafter specified with individual pieces of equipment.

B. If the Contractor's office is in excess of a fifty (50) mile radius of the project, he shall appoint a local qualified contractor to perform any emergency repairs or adjustments required during the guarantee period. The name of the contractor appointed to provide emergency services shall be submitted to the Architect/Engineer for approval.

3.6 CLEANING

A. Refer to the Specification Section relating to PROJECT CLOSEOUT or FINAL CLEANING for general requirements for final cleaning.

B. Clean all light fixtures, lamps and lenses prior to final acceptance. Replace all inoperative lamps.

END OF SECTION 260001

SECTION 260500 - BASIC MATERIALS AND METHODS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions; as appropriate, apply to the work specified in this section.

B. Refer to all portions of the Contract Documents as well as the plans and specifications for the other various trades and materials and be thoroughly familiar with all provisions regarding electrical work.

PART 2 - PRODUCTS

2.1 WIRE (600 VOLT AND BELOW)

A. All conductors used in the work shall be soft drawn annealed copper having a composition of not less than 98% of pure copper. Conductors shall be standard code gauge in size, insulated, and shall have insulation rated for use at 600 volts. The contractor's bid shall reflect the use of all copper conductors. When aluminum conductors are used as part of the V.E. process, their use shall be limited to circuits, feeders and services rated 200 Amperes and larger and shall be of the high alloy, compact stranded type, Southwire SIM pull THHN, SIM pull THWN or equivalent. It shall be the contractor's responsibility for properly upsizing the conductors and associated conduit to achieve the equivalent ampere rating of the circuit/feeder/service as specified for copper conductors.

B. Unless otherwise noted or specified, insulation shall be Type THWN. Wires shall be of the single conductor type and shall be stranded. Wire insulation shall not contain any asbestos materials.

C. Wire #8 AWG and smaller may be type MC-cable.

D. Throughout the system, conductors shall be identified as to phase and voltage of system by color-coding. Color-coding shall be continuous the full length of wire for all wire sizes. Identification by permanent paint bands or tags at outlets will not be acceptable. Surface printing at regular intervals on all conductors shall indicate manufacturer, size, voltage, and insulation type. White and/or gray colored insulation shall be used for grounded conductors and only for grounded conductors.

E. The color code assigned to each phase wire shall be consistently followed throughout the project. The following systems of color-coding shall be strictly adhered to:

1. 208/120 V Systems
    a. Grounding leads green
    b. Grounded neutral leads white
    c. Ungrounded phase wires black, red and blue
2. 277/480 V Systems
    a. Grounding leads green
    b. Grounded neutral leads gray
    c. Grounded phase wires brown, orange, yellow

F. Where multiple neutral conductors are installed in a common raceway, the neutral conductor for each circuit shall be separately identified in accordance with the National Electric Code (NEC).

2.2 CONDUIT

A. Unless otherwise specified or shown on the drawings, all conduit shall be electrical metallic tubing (EMT).

B. All conduit shall be new and shall bear the inspection label of the Underwriters Laboratories, Inc. (U.L.).

C. Fittings for EMT shall be hot-dipped galvanized and shall be of an approved type specially designed and manufactured for their purpose.

D. All flexible conduit, where installed indoors and outdoors, shall be of the flexible liquid tight metallic type. Flexible weatherproof electrical conduit is prohibited from use on this project.

E. Metallic conduit shall be metallized, sheradized, or hot-dipped galvanized.

F. Where conduit is installed exposed in finished spaces (excluding mechanical, equipment and electrical rooms), conduit shall be painted to match adjacent surfaces (color as selected by the Architect/Engineer). All fittings, couplings, boxes, covers, etc. shall match color of conduit. Color of conduit shall comply with color code noted below.

Power and Lighting - Non-Emergency	Standard Conduit Finish
Power and Lighting - Emergency	Yellow with Black Lettering - Lettering to Denote branch of emergency power system (Life Safety or Equipment)
Tele/Data/CATV	Green
Security/CCTV	Purple

2.3 METAL-CLAD CABLE (600 VOLTS AND BELOW)

A. Where permitted by NEC and local codes and ordinances, metal-clad (MC) cables may be used in lieu of conduit and wiring specified elsewhere herein.

B. Installation of MC cables shall be in compliance with the National Electric Code (NEC).

C. Conductors shall be softdrawn annealed copper having a composition of not less than 98% of pure copper.

D. Conductors shall be solid -type, standard Code gauge in size, insulated, and shall be rated for use at 600 volts or below. Minimum size shall be No. 12.

E. Conductor insulation shall be of a type listed in the NEC and be rated for 75 deg. C (167 deg. F) as a minimum and shall be of a type approved for use in MC cable.

2.4 EXPANSION FITTINGS

A. Each conduit that is buried in or rigidly secured to the building construction on opposite sides of a building expansion joint and each long run of exposed conduit that may be subject to excessive stresses shall be provided with an expansion fitting. Expansion fittings shall be made of hot-dipped galvanized malleable iron and shall have a factory-installed packing, which will prevent the entrance of water, a pressure ring, and a grounding ring

B. In addition to the grounding ring, a separate grounding conductor shall be provided. This grounding conductor shall be an external flexible copper ground securely bonded by approved grounding straps on each end of the fitting. Grounding conductor may be omitted when expansion fitting includes an approved integral grounding conductor or device.

C. Where conduits are buried in concrete, they shall cross the building expansion joints at right angles. Ends of conduit shall be provided with insulated bushings.

2.5 OUTLET BOXES

A. Outlet boxes in concealed conduit systems shall be flush mounted. Boxes shall be galvanized steel of sufficient size to accommodate devices shown and shall have raised covers. Requirements of the NEC shall be minimum.

B. Boxes for lighting fixtures shall be four inch (4") octagon, not less than 1-1/2" deep. Where boxes are installed in concrete, boxes designed for this application shall be used.

C. Outlet boxes for switches and receptacles in concealed work shall be 4" square, and not less than 1-1/2" deep. Flush mounted outlet boxes shall be installed with plaster rings.

D. Outlet boxes for switches and receptacles installed in exposed conduit system shall be cast iron or cast aluminum Type FD or approved equivalent.

E. Where multiple outlet boxes are shown to be installed at the same location, they shall be installed using B-Line Series BB8 mounting bracket or approved equivalent. Where single boxes are shown to be installed, the B-Line Series BB2 mounting bracket or approved equivalent shall be used.

F. Outlet boxes for adjacent rooms shall not be installed in the same stud space to minimize sound transmission.

G. Outlet boxes used for lighting toggle switches shall have outlet box stabilizer(s) installed.

2.6 PULL BOXES

A. Furnish and install pull boxes. Boxes shall be code gauge galvanized steel with screw attached access panels unless noted otherwise in top, side or bottom as required.

2.7 OUTLET COVER PLATES

A. Unless otherwise noted, all outlets including telephone outlets, television outlets, computer outlets, etc. shall be fitted with cover plates of the type indicated below.

B. Cover plates shall be uniform in design and finish for switches, receptacles, and other outlets requiring cover plates. Plates shall be one (1) piece of the required number of gangs. Sectional plates shall not be used.

C. Cover plates shall be smooth plastic with gray, white, black, brown or ivory finish. Color shall be selected by the Architect/Engineer to suit the wall finish.

D. Provide blank cover plates for all un-used/empty device boxes including, but not limited to tele/data, CATV, access controls, etc....boxes.

2.8 WIRING DEVICES

A. Wiring devices shall be as listed in the following table, except that color of device shall match color of outlet cover plate.

1. Leviton / Hubbell (or equivalent by Pass and Seymour)
Single Pole-20A (CS120-2 / CS120)
Toggle Switch

Three Way-20A (CS320-2 / CS320)
Toggle Switch

Four Way-20A (CS420-2 / CS420) Toggle Switch

20A 125V 2P 3W Duplex (CR020 / CR020)
Smooth Face
Grounded Receptacle

20A 125V 2P 3W Duplex (7899 / GFR5352)
GFCI Receptacles

20A 250V 2P 3W (5823 / HBL5461)
Grounded Receptacle

30A 250V 2P 3W (5372 / HBL9430)
Grounded Receptacle

50A 250V 2P 3W (5374 / HBL9450)
Grounded Receptacle

Switch with (120V)1221-PLR / HBL-1221PL
Pilot Light (277V)1222-7PLR /HBL-1221-PL

2.9 DIMMER SWITCHES

A. Dimmer switches shall be Pass and Seymour Radient series or approved equivalent. Ratings shall be of appropriate wattage for the circuits to be controlled. Provide and install all required 0-10V. control interface units for all LED lighting circuits. Dimmer loading shall not exceed 80% of the dimmer rating. Dimmers shall be UL listed.

2.10 FLOOR OUTLETS/FLOOR BOXES

A. Floor outlets shall consist of the assembly of wiring devices, floor boxes and fittings. Floor boxes shall be16 gauge galvanized sheet metal complete with fusion-banded epoxy paint. Boxes shall be fully adjustable before concrete pour.

B. Contractor shall adjust box such that coverplate is flush against floor surface. When multiple floor outlets are shown directly adjacent to each other, multiple gang type boxes with separating partitions between each gang shall be utilized. Provide separate conduit for each function.

C. Floor boxes shall be round with threads for conduits or hubs as required and be of suitable height for concrete slab use. Box shall be capable of accepting the duplex receptacle or other wiring device or usage as indicated.

D. Each floor box shall be Hubbell System One (or equivalent) with round covers. Quantity of gangs/size of box shall be individually determined by each location's requirements. Provide fire-rated poke-thrus as required by floor assemblies.

E. Where box is to be installed in an existing concrete slab above the ground level, caution must be taken to ensure that the structural integrity of the slab is not impaired by the box installation. Coordinate with the Architect. Use a core drill, poke through device, fire rated to at least the rating of the floor system, as per National Electrical Code (NEC). Depth of unit shall be as required. Hole by the Electrical Contractor. Color by Architect during shop drawing submittal. Color choices shall include brushed aluminum, black power-coated, brass-plated, bronze-plated and/or satin nickel-plated.

F. As a minimum, provide and install two (2) 120V duplex convenience receptacles, two (2) RJ-11 telephone outlets, four (4) RJ-45 data outlets in each floor box, four (4) USB charging ports and two (2) HDMI ports.

PART 3 - EXECUTION

3.1 MOUNTING HEIGHTS

A. Unless otherwise noted on the drawings or required by the Architect/Engineer, the mounting heights set forth below shall apply. Dimensions given are from finished floor to the centerline of the device.

1.	Intercom Staff Stations	4'-0"
2.	Toggle Switches	4'-0"
3.	Receptacles	1'-6"
4.	Panelboards	6'-7" to top of can
5.	Tele/Data Outlets	1'-6"
6.	Fire Alarm Audio/Visual	6" from ceiling on wall *
7.	Fire Alarm Hand Stations	4'-0"
8.	Fire Alarm Visual Only	6" from ceiling on wall *

* Mounting height shall be 6" from ceiling or maximum 80" above finished floor, whichever is lowest.

3.2 WIRE (600 VOLT AND BELOW)

A. Service entrance, feeders, and motor circuit conductors shall be run their entire length without joints or splices. Splices and joints in branch circuit wiring shall be only at outlets or in accessible junction boxes.

B. Joints and splices in branch circuit wiring shall be made with compression type solderless connectors. Connectors of the nonmetallic screw on type are not acceptable.

C. Terminations or splices for conductors # 6 AWG and larger shall utilize Burndy Unitap, Polaris Black or equivalent connectors.

D. Unless otherwise specified, all wiring shall be installed in conduit.

E. No wire shall be smaller than No. 12 for power or lighting service, fixture whips or for switch legs. Wire for each branch circuit shall be of a single size and type from the branch circuit protective device to the last outlet on the circuit unless noted otherwise.

F. Not more than three (3) branch circuits shall be installed in a raceway for three-phase electrical systems. For single phase electrical systems, the number of circuits in any one raceway shall be limited to two (2).

G. Branch circuits shall have a 200% rated neutral where more than one (1) branch circuit is in a raceway and the neutral conductor is shared. The neutral should match the branch phase wire size when only one (1) circuit is in a raceway and when the neutral conductor is not shared. Refer to the "Multiple Circuit Neutral Wiring Diagram." Provide multi-pole breakers to simultaneously trip all phase conductors for shared neutral circuits.

H. Type THWN conductors may be connected directly to recessed fixtures only when the fixtures are equipped with outlet boxes approved by Underwriters Laboratories, Inc. for use with wires having insulation rated for maximum operating temperature of 75o C., (167o F.); otherwise, conductors with Type SF2 insulation shall be run from fixture terminal connections to an outlet box placed at least one foot (1') from the fixture, such a tap shall extend for at least four feet (4'), but not more than six feet (6'), in flexible metal conduit.

I. Branch circuit home run numbers shown on the drawings shall be used for connection of circuit wiring to similarly numbered protective devices in branch circuit panelboards.

J. Where the length of a home run, from panel to the first outlet exceeds 75 feet (75') for 120 volt circuits or 175 feet (175') for 277 volt circuits, the conductor size shall be No. 10 AWG or that shown on the drawings, whichever is larger.

K. For all 3-phase circuits, contractor shall provide and install a full size neutral conductor and a grounding conductor for a complete 5-wire circuit. If the neutral conductor is not required by the equipment, contractor shall install wire nuts on each end of the neutral conductor for future use.

3.3 CONDUIT

A. Couplings and connectors for EMT shall be compression type or cast iron set screw type.

B. Where conduits enter boxes or cabinets that do not have threaded hubs the conduit shall be secured in place with galvanized locknuts inside and outside and shall have bushings

inside for interior locations. Conduits larger than one inch (1") shall have galvanized insulating bushings.

C. All conduits shall be installed as indicated or scheduled on the drawings and shall be of sufficient size to accommodate the required number of insulated conductors including equipment-grounding conductor. A grounding conductor shall be pulled in every raceway and properly terminated. The Contractor shall increase the conduit size from that shown on the drawings where necessary to accommodate the equipment-grounding conductor and/or where to comply with the NEC.

D. Unless otherwise noted, conduit shall be run concealed. Conduit runs from wall mounted receptacles, toggle switches, etc. shall be run concealed in walls whenever possible.

E. Conduit runs shall be straight; elbows and bends shall be uniform, symmetrical, and free from dents or flattening. All conduit shall be installed with runs parallel or perpendicular to walls, ceilings and structural members.

F. Conduit shall not be run nearer than three inches (3") to hot water or steam pipes except where crossings are unavoidable. Conduit shall be kept at least one inch (1") from covering of pipe crossed and the conductor size shall be increased one (1) size

G. Conduit shall be held securely in place by approved hangers and fasteners of appropriate design and dimensions for the particular application. Support shall be such that no strain will be transmitted to the outlet box and/or pull box supports. Conduit shall be secured only to the building structure.

H. All conduit runs shall be installed in accordance with all applicable sections of the National Electrical Code and local codes or ordinances.

I. Where empty conduits are shown, a #14 pull wire shall be installed and conduits shall be capped.

J. Terminations to all mechanical equipment and to all dry-type transformers shall be made using a minimum of 12" to a maximum of 24" liquid-tight flexible metallic conduit.

K. At each concealed junction box in the power and lighting system, identify the panel and circuit number(s) contained in the junction box by writing in permanent marker on the outside of the junction box cover.

L. Where conduits are run from condition spaces to/thru un-conditioned spaces, the ends of the conduits shall be sealed (after conductor installation) to prevent the transmission of air from non-conditioned spaces in to the conditioned spaces. Expanding spray foam and EYS seals are approved methods of sealing conduits.

M. For all surface mounted devices, including fire alarm, intercom and nurse call systems, device boxes shall be Wiremold No. R5752 and R5753 or approved equivalent style boxes sized such that device does not overhang edge(s) of back box. Color of box shall match device.

3.4 METAL-CLAD CABLE (600 VOLTS AND BELOW)

A. The metallic sheath shall be galvanized steel or aluminum corrugated sheath type and shall be terminated at outlet boxes, cabinets, etc. with fittings specifically approved for such use, which shall properly ground the metallic sheath.

B. Each metal-clad cable assembly shall have one (1) green insulated ground conductor sized as required by NEC for the application as a minimum size.

C. Where run in walls, cable shall be fastened using B-Line Series BX4 or approved equivalent cable fasteners. Cable shall be fastened to wall stud not more than 8" from entry into device box

3.5 WIRING DEVICES

A. All wiring devices installed shall be identified as to which panel serves it and which overcorrect protection device protects the wiring device. This shall be accomplished via panel name and circuit number being written using a permanent marker on the back side of the coverplate. In health-care facilities, panel name and circuit number shall be permanently engraved into each receptacle coverplate.

3.6 MANUFACTURER'S DIRECTION

A. Contractor shall be responsible for coordinating all aspects of equipment electrical service installation for all electrical gear, devices, mechanical, plumbing, fire protection, architectural, and owner furnished equipment including any and all medical equipment. Contractor shall obtain and review actual manufacturer's installation instructions and shall install electrical facilities to said equipment in accordance with the instructions, NEC, NFPA and contract documents. Should a discrepancy exist between the manufacturer's installation directions and the contract documents, the engineer shall be notified in writing immediately.

3.7 COORDINATION WITH OTHER TRADES

A. Prior to purchasing and installing any wire and/or conduit for all circuitry to mechanical equipment, medical equipment, owner furnished equipment, and other equipment requiring electrical power furnished by other trades as part of this project, contractor shall review equipment cut sheets and shall verify exact equipment electrical requirements. Any discrepancies between contract documents and equipment submittals shall be immediately brought to the architect/engineer's attention for clarification.

END OF SECTION 260500

SECTION 260571 - ACCEPTANCE TESTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions of the Contract apply to the Work specified in this Section.

B. Refer to all Electrical Sections of the Specifications, as well as the Specifications for the other various trades and materials and be thoroughly familiar with all provisions regarding electrical work.

1.2 SUMMARY

A. This section outlines the acceptance testing requirements and division of responsibility.

1.3 SCOPE

A. Contractor shall engage the services of a recognized independent NETA Certified testing firm or professional electrical engineering firm for the purpose of performing inspections and tests as herein specified.

B. The testing firm shall provide all materials, equipment, labor and technical supervision to perform such test and inspections.

C. It is the intent of these tests to assure that all electrical equipment is operational and within industry and manufacturer's tolerances and is installed in accordance with design specifications.

D. The tests and inspections shall determine suitability for energization.

1.4 REFERENCES

A. All inspections and tests shall be in accordance with the latest editions following applicable codes and standards except as provided otherwise herein.

1. National Electrical Code – NEC
2. National Electrical Manufacturer's Association - NEMA.
3. American Society for Testing and Materials - ASTM
4. Institute of Electrical and Electronic Engineers – IEEE
5. National Electrical Testing Association – NETA
6. American National Standards Institute – ANSI
7. State Codes and Ordinances
8. Insulation Cable Engineers Association – ICEA
9. National Electrical Safety Code – NESC

B. All inspections and tests shall utilize the following references:

1. Project Design Specifications
2. Project Design Drawings
3. Manufacturer's Instruction Manuals applicable to each particular apparatus.

1.5 QUALIFICATIONS OF TESTING AGENCY

A. The testing/engineering firm shall be a corporately independent testing organization that can function as an unbiased testing authority, professionally independent of the manufacturers, suppliers and installers of equipment or systems evaluated by the testing firm.

B. The testing firm shall be regularly engaged in the testing of electrical equipment devices, installations and systems.

C. The testing firm shall have been engaged in such practices for a similar size project.

D. The testing firm shall utilize only full-time technicians who are regularly employed by the firm. Electrically unskilled employees are not permitted to perform testing or assistance of any kind. Electricians and/or linemen may assist, but may not perform testing and/or inspection services.

E. The testing firm shall submit the "on site" foreman's qualifications and experience through the Contractor at the pre-construction conference for review and approval by the Engineer.

F. Contractor shall submit statement of qualifications of proposed testing firm at the preconstruction conference for approval and acceptance by the Engineer.

1.6 DIVISION OF RESPONSIBILITY

A. Testing firm shall perform the following tests as outlined in these specifications:

1. Thermographic Survey

B. Contractor shall perform the following tests as outlined in these specifications:

1. Low Voltage Cable
2. Phasing and Rotation Tests

1.7 TEST REPORT

A. The test report shall include the following:

1. Summary of project.
2. Description of project.
3. Description of test
4. Test results.
5. Conclusions and recommendations.
6. Appendix, including appropriate test forms.
7. Identification of test equipment used.
8. Signature of responsible test organization authority.

B. Furnish three (3) copies of the complete report to the Engineer prior to requesting substantial completion and no later than thirty (30) days after completion of testing procedures unless directed otherwise. After acceptance of the report, Contractor shall submit an electronic copy of the report in PDF format.

C. All tests shall be performed with apparatus de-energized except where otherwise specifically required.

D. The testing firm shall have a designated safety representative on the project to supervise operations with respect to safety.

E. The testing firm shall have a calibration program that assures that all applicable test instrumentation is maintained within rated accuracy. The accuracy shall be directly traceable to the National Bureau of Standards. Instruments shall be calibrated in accordance with the following frequency schedule:

F. Field Instruments: Analog - 6 months maximum
Digital - 12 months maximum

G. Laboratory Instruments: 12 months

H. Leased specialty equipment: 12 months

I. Dated calibration labels shall be visible on all test equipment.

J. Records must be kept up to date which show date and results of instruments calibrated or tested.

K. An up-to-date instrument calibration instruction and procedure will be maintained for each test instrument.

L. Calibrating standard shall be of higher accuracy than that of the instrument tested.

1.8 GENERAL

A. An outline of tests required is included in this section. Refer to applicable NETA, ANSI, NEMA, IEEE and other test standards for exact procedures, methods and requirements.

PART 2 - PRODUCTS

2.1 Not Applicable

PART 3 - EXECUTION

3.1 TESTS

A. Upon completion of the work, the entire electrical system shall be tested and shall be shown to be in perfect working condition, in accordance with the intent of the specifications.

3.2 EQUIPMENT TESTS

A. Testing Agency shall perform thermographic study of all terminations in the new electrical system prior to acceptance. Thermographic study shall be performed after load is placed on the system

B. All 600 volt and below cables shall be tested as specified after being installed but prior to being terminated.

C. All terminations (lugs, split-bolts, etc.) shall have their "tightness" torque values measured and verified against NEC and manufacturer's requirements.

3.3 LOW VOLTAGE CABLE, 600 V MAXIMUM

A. Compare cable data with drawings and specifications. Inspect exposed sections of cables for physical damage and correct connection in accordance with one-line diagram.

B. Verify tightness of accessible bolted connection by calibrated torque wrench in accordance with manufacturer's published data. Perform thermographic survey.

C. Inspect compression-applied connectors for correct cable match and indentation.

D. Verify cable color-coding with applicable Engineer's specifications.

E. For all service entrances, switchboards, MCC and all panelboard feeders, perform insulation-resistance test on each conductor with respect to ground and adjacent conductors. Applied potential shall be 1000 volts dc for one minute.

F. Perform continuity test to insure correct cable connection.

G. Bolt-torque levels shall be in accordance with manufacturer's requirements. Measure and record results.

H. Minimum insulation-resistance values shall be not less than 50 mega-ohms.

I. Investigate and report on all deviations between adjacent phases.

3.4 PHASING AND ROTATION:

A. Perform phasing test on each circuit tie section energized by separate sources.

B. Perform tests from permanent source.

C. Damage caused due to omission of this test shall be corrected at Contractor's expense.

3.5 THERMOGRAPHIC SURVEY:

A. Thermographic survey shall be performed with equipment utilizing long wave technology that provides photo record of deficient areas.

B. Equipment to be inspected shall include all current-carrying devices installed under this contract, generally, all new high and low voltage cable terminations and splices. Specific equipment to be surveyed includes the following.

1. Panelboards
2. Safety Switches (fused and non-fused)

C. Inspect physical, electrical and mechanical condition. Remove all necessary covers prior to thermographic inspection.

D. Provide report including the following:

1. Discrepancies.
2. Temperature difference between the area of concern and the reference area.
3. Cause of temperature difference.
4. Areas inspected. Identify inaccessible and/or unobservable areas and/or equipment.
5. Identify load conditions at time of inspection.
6. Provide photographic thermograms of all equipment (non-deficient and deficient areas). Provide corresponding digital photograph (non-thermal image) of electrical equipment scanned.
7. Inspect distribution systems with imaging equipment capable of detecting a minimum temperature difference of 1 degree C at 30 degrees C.
8. Equipment shall detect emitted radiation and convert detected radiation to visual signal.
9. Thermographic surveys should be performed during periods of maximum possible loading but not less than 40 percent of rated load of the electrical equipment being inspected. Refer to NFPA 70B-1994, Section 18-16 (Infrared Inspection).
10. Temperature differences for 1 degree C to 3 degrees C indicate possible deficiency and warrant investigation.
11. Temperature differences of 4 degrees C to 15 degrees C indicated deficiency; repair as time permits.
12. Temperature differences of 16 degrees C and above indicate major deficiency; repair immediately.

END OF SECTION 260571

SECTION 262713 - ELECTRICAL DISTRIBUTION SYSTEM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. The general provisions of the Contract, including the Conditions of the Contract (General, Supplementary, and other Conditions); as appropriate, apply to the work specified in this section.

B. Refer to all Electrical specification sections, as well as the plans and specifications for the other various trades and materials and be thoroughly familiar with all provisions regarding electrical work.

1.2 ELECTRIC SERVICE

A. Contractor shall modify existing normal 277/480 volt 3 phase 4 wire electrical system(s) at the facility as specified herein and noted on the drawings. This Contractor shall be responsible for the coordination of all electrical work with the local utility company, ULL. Contractor shall be responsible for determining the proper breakers and connectors to tie into the existing electrical systems. Short circuit current interrupting rating of new breakers shall match rating of existing breakers. Contractor shall be responsible for examining the panelboards to be tied into, building structure, and site, and shall include in his bid all materials and time (regular pay and overtime pay) to install the new feeders avoiding conflicts with existing equipment to remain.

1.3 GENERAL

A. All electrical gear furnished as part of this project, panelboards, dry-type transformers, safety switches, etc. shall be of the same manufacturer unless specified otherwise. Electrical equipment manufactured by a subsidiary or parent company of manufacturer that is prior approved is not itself prior approved unless its own manufacturer's name specifically is listed as being prior approved.

1.4 ARC-FLASH; COORDINATION AND FAULT CURRENT STUDIES

A. Provide and install a fully coordinated electrical distribution system as directed by the Overcurrent Protective Device Coordination Study at no additional costs to the Owner.

B. The contractor shall provide all breakers, trip plugs, solid state breakers, etc. to provide a fully coordinated electrical system.

C. Refer to individual specification sections of each specified study for additional requirements.

1.5 SERIES RATING OF EQUIPMENT

A. The electrical gear provided and installed as part of this project shall not be series rated.

PART 2 - PRODUCTS

2.1 PANELBOARDS

A. Panelboards shall be circuit breaker type using quick-make, quick-break, trip free, thermal magnetic trip indicating, bolt-on circuit breakers. Two and three pole branches and mains shall be common trip. Panelboards shall be dead front safety type with main breaker or main lugs, and number and size of branches as shown on the drawings. Panelboards shall have single, feed through, or double lugs, to accommodate feeder conductors as shown on the drawings, and shall have neutral and ground bus for termination of conductors. Bussing shall be copper.

B. Doors shall be fitted with flush cylinder locks, keys to which shall all on project be alike. Two (2) keys shall be furnished for each lock. Cabinet fronts shall be finished as directed by the Architect/Engineer. Cabinet fronts shall not be removable with door in the locked position. Provide for each panel a directory frame with waterproof transparent plastic window on inside of door and place therein a typewritten identification of all circuits.

C. Directories shall be made only after permanent room numbers have been assigned. Room numbers shown on the construction drawings shall not be used for making directories. Each circuit shall be clearly identified as to use and location (ex: Receptacles Rooms 201, 202 or Lighting Rooms 207, 209, 211, and 213).

D. Cabinets shall be galvanized steel not less than twenty inches (20") in width. Gutters shall not be smaller than minimum dimensions required by the National Electrical Code.

E. Double section panelboards shall be comprised of cabinets of equal dimensions.

F. All panels rated NEMA 1, shall be of the door-in-door type construction providing tool-less access to interior of the panelboard(s).

G. Panelboards shall be as shown in the schedules and shall be completely factory assembled. Do not purchase panelboards or cabinets until shop drawings have been approved. Approved manufacturers include:

1. General Electric
2. Square D
3. Eaton-Cutler Hammer
4. Siemens
5. Approved Equivalent

H. Minimum short circuit current interrupting ratings for circuit breakers shall be 14,000 amps. Where a specific interrupting rating is shown on the drawings, in the panel schedules, or as required by the coordination and fault current study, panelboards and associated circuit breakers shall be rated for that value as a minimum at no additional cost to the owner.

I. In branch circuit panelboards having two (2) vertical columns of devices, circuit numbers shall be such that, starting at the top, odd numbers shall be used in sequence down the left hand side. See Schedule of Panelboards on drawings for circuit device sizes and number of poles.

J. Construction of panelboards shall be such that, where applicable, any three (3) adjacent single-pole devices are individually connected to each of the three different phases in such a manner that 2 or 3 pole devices, when available, can be installed at any location.

K. UL Listing: Panelboards shall be listed by UL and bear the UL label.

L. Interior panelboards shall be NEMA I unless noted otherwise. All exterior panelboards shall be rated NEMA 3R.

2.2 LABELS

A. All switchboards, panelboards, starters, VFD's, contactors, transformers, safety switches and fused safety switches installed by this contractor shall have plastic tags with 1/4" characters embossed thereon identifying the equipment by name, voltage, ampacity, phase and number of current carrying conductors such as:

Panel Name
120/208 V - 400A
3 Phase - 4 Wire

Fed From Panel:_____, Circuit _____

The tags shall be fixed to the center of the equipment cover/door with a suitable heavy duty industrial grade adhesive.

B. Color Coding of labels shall be as follows:

Normal Power	White Background with Black Letters
Emergency Power (Life Safety Branch)	Red Background with White Letters

2.3 SAFETY SWITCHES

A. Furnish and install safety switches at locations and in capacities shown on the drawings, as hereinafter specified and/or as required by the latest edition of the National Electrical Code.

B. Safety switches shall be rated heavy duty and fusible.

C. Safety switches exposed to the weather shall be rated NEMA 3R.

D. Safety switches shall be of the solid neutral type where required by circuit or feeder specified.

E. Safety switch covers shall be internally mechanically held closed when in the ON position and shall be allowed to open in the OFF position. The switch shall come equipped with provisions to allow the switch to be padlocked in the off position.

F. Galvanized angle or other suitable supports shall be provided for switches that cannot be mounted on walls or other rigid surfaces. Switches shall not be supported by conduit alone and shall not be mounted on HVAC or other equipment unless specifically approved by the Architect/Engineer. Verify mounting heights for all exterior locations with Architect/Engineer prior to roughin.

G. Safety switches shall be General Electric, Square "D", Eaton Electrical, Siemens or approved equivalent.

2.4 FUSES

A. Unless otherwise noted or specified, all fuse holders shall be equipped with dual-element, time-lag, and current limiting fuses. Provide one (1) spare set of fuses for each size initially installed, with a minimum of three (3) fuses of each size. Spare fuses shall be turned over to the Owner's maintenance supervisor prior to requesting substantial completion inspection.

B. Fuses shall be Gould, Bussman, or approved equivalent.

PART 3 - EXECUTION

3.1 MANUFACTURER'S DIRECTION

A. All electrical gear shall be installed in accordance with the manufacturer's directions. Contractor shall review these directions prior to rough-in. Should any discrepancies exist between the contract documents and the manufacturer's direction, contractor shall advise the engineer in writing.

B. All electrical terminations shall be properly tightened to manufacturer's specifications. Where manufacturer's specifications are not available, contractor shall refer to the NEC and adjust tightness valves (torque) to the NEC published values.

C. Install all safety switches, breakers, disconnects, etc., in accordance with manufacturer's directions and maintain all required NEC clearances. Coordinate exact locations in field with applicable contractors.

END OF SECTION

ALTERNATES

Alternate No. 1 – Cleaning existing Supply Ductwork and Supply Grilles in work area.
Alternate No. 2 – Cleaning existing Return Ductwork and Return Grilles in work area.
Alternate No. 3 – Additional Testing, Adjusting, and Balancing of all Supply Grilles in work area.

END OF SECTION

INSTRUCTIONS TO BIDDERS

https://www.doa.la.gov/.../24_Instructions_to_Bidders_July2018.docx

ARTICLE 1

DEFINITIONS

1.1 The Bid Documents include the following:

Advertisement for Bids (if applicable)
Instructions to Bidders
Bid Form
Bid Bond
General Conditions of the Contract for Construction,
AIA Document A201, 2017 Edition
Supplementary Conditions
Contract Between Owner and Contractor
and Performance and Payment Bond
Affidavit
User Agency Documents (if applicable)
Change Order Form
Partial Occupancy Form
Recommendation of Acceptance
Asbestos Abatement (if applicable)
Other Documents (if applicable)
Specifications & Drawings
Addenda issued during the bid period and
acknowledged in the Bid Form

1.2 All definitions set forth in the General Conditions of the Contract for Construction, AIA Document A201 and the Supplementary Conditions are applicable to the Bid Documents.

1.3 Addenda are written and/or graphic instruments issued by the Architect or Purchasing Office prior to the opening of bids, which modify or interpret the Bid Documents by additions, deletions, clarifications, corrections and prior approvals.

1.4 A bid is a complete and properly signed proposal to do the work or designated portion thereof for the sums stipulated therein supported by data called for by the Bid Documents.

1.5 Base bid is the sum stated in the bid for which the Bidder offers to perform the work described as the base, to which work may be added, or deleted for sums stated in alternate bids.

1.6 An alternate bid (or alternate) is an amount stated in the bid to be added to the amount of the base bid if the corresponding change in Project scope or materials or methods of construction described in the Bid Documents is accepted.

1.7 A Bidder is one who submits a bid for a prime Contract with the Owner for the work described in the Bid Documents.
1.8 A Sub-bidder is one who submits a bid to a Bidder for materials and/or labor for a portion of the work.

1.9 Where the word "Architect" is used in any of the documents, it shall refer to the Prime Designer of the Project, regardless of discipline.

ARTICLE 2

PRE-BID CONFERENCE

2.1 A Pre-Bid Conference shall be held at least 10 days before the date for receipt for bids. The Architect shall coordinate

the setting of the date, time and place for the Pre-Bid Conference with the User Agency and shall notify in writing the Owner and all who have received sets of the Bid Documents to attend. The purpose of the Pre-Bid Conference is to familiarize Bidders with the requirements of the Project and the intent of the Bid Documents, and to receive comments and information from interested Bidders. If the Pre-Bid Conference is stated in the Advertisement for Bids to be a Mandatory Pre-Bid Conference, bids shall be accepted only from those bidders who attend the Pre-Bid Conference. Contractors who are not in attendance for the **entire** Pre-Bid Conference will be considered to have not attended.

2.2 Any revision of the Bid Documents made as a result of the Pre-Bid Conference shall not be valid unless included in an addendum.

ARTICLE 3

BIDDER'S REPRESENTATION

3.1 Each Bidder by making his bid represents that:

3.1.1 He has read and understands the Bid Documents and his bid is made in accordance therewith.

3.1.2 He has visited the site and has familiarized himself with the local conditions under which the work is to be performed.

3.1.3 His bid is based solely upon the materials, systems and equipment described in the Bid Documents as advertised and as modified by addenda.

3.1.4 His bid is not based on any verbal instructions contrary to the Bid Documents and addenda.

3.1.5 He is familiar with Code of Governmental Ethics requirement that prohibits public servants and/or their immediate family members from bidding on or entering into contracts; he is aware that the Designer and its principal owners are considered Public Servants under the Code of Governmental Ethics for the limited purposes and scope of the Design Contract with the State on this Project (see Ethics Board Advisory Opinion, No. 2009-378 and 2010-128); and neither he nor any principal of the Bidder with a controlling interest therein has an immediate family relationship with the Designer or any principal within the Designer's firm (see La. R.S. 42:1113). Any Bidder submitting a bid in violation of this clause shall be disqualified and any contract entered into in violation of this clause shall be null and void.

3.2 The Bidder must be fully qualified under any State or local licensing law for Contractors in effect at the time and at the location of the work before submitting his bid. In the State of Louisiana, Revised Statutes 37:2150, et seq. will be considered, if applicable.
The Contractor shall be responsible for determining that all of his Sub-bidders or prospective Subcontractors are duly licensed in accordance with law.

ARTICLE 4

BID DOCUMENTS

4.1 Copies
4.1.1 Bid Documents may be obtained from the Architect for a deposit as stated in the Advertisement for Bids. The deposit will be refunded as stated in the Advertisement for Bids. No deposits will be refunded on Bid Documents returned later than ten days after receipt of bids.
4.1.1.2 As an alternative method of distribution, the Designer may provide the Bid Documents in electronic format. They may be obtained without charge and without deposit as stated in the Advertisement for Bids.

4.1.1.2.1 If electronic distribution is available, printed copies will not be available from the Designer, but arrangements can be made to obtain them through most reprographic firms and/or plan rooms.
4.1.1.2.2 If electronic distribution is available, the reproduction cost on the first paper plan set acquired by bona fide prime bidders will be fully refunded by the Designer upon delivery of the documents to the Designer in good condition no later than ten days after receipt of bids.

4.1.1.2.3 If electronic distribution is available, all other plan holders are responsible for their own reproduction costs.

4.1.2 Complete sets of Bid Documents shall be used in preparing bids; neither the Owner nor the Architect assume any responsibility for errors or misinterpretations resulting from the use of incomplete sets of Bid Documents.

4.1.3 The Owner or Architect in making copies of the Bid Documents available on the above terms, do so only for the purpose of obtaining bids on the work and do not confer a license or grant for any other use.

4.2 Interpretation or Correction of Bid Documents

4.2.1 Bidders shall promptly notify the Architect of any ambiguity, inconsistency or error which they may discover upon examination of the Bid Documents or of the site and local conditions.

4.2.2 Bidders requiring clarification or interpretation of the Bid Documents shall make a written request to the Architect, to reach him at least seven days prior to the date for receipt of bids.

4.2.3 Any interpretation, correction or change of the Bid Documents will be made by addendum. Interpretations, corrections or changes of the Bid Documents made in any other manner will not be binding and Bidders shall not rely upon such interpretations, corrections and changes.

4.3 Substitutions

4.3.1 The materials, products and equipment described in the Bid Documents establish a standard of required function, dimension, appearance and quality to be met by any proposed substitution. No substitutions shall be allowed after bids are received.

4.3.2 No substitution will be considered unless written request for approval has been submitted by the Proposer and has been received by the Architect at least seven (7) working days prior to the opening of bids. (La. R.S. 38:2295(C)) Each such request shall include the name of the material or equipment for which it is to be substituted and a complete description of the proposed substitute including model numbers, drawings, cuts, performance and test data and any other information necessary for an evaluation. A statement setting forth any changes in other materials, equipment or work that incorporation of the substitute would require shall be included. It shall be the responsibility of the proposer to include in his proposal all changes required of the Bid Documents if the proposed product is used. Prior approval, if given, is contingent upon supplier being responsible for any costs which may be necessary to modify the space or facilities needed to accommodate the materials and equipment approved.

4.3.3 If the Architect approves any proposed substitution, such approval shall be set forth in an addendum. Bidders shall not rely upon approvals made in any other manner.

4.4 Addenda

4.4.1 Addenda will be transmitted to all who are known by the Architect to have received a complete set of Bid Documents.

4.4.2 Copies of addenda will be made available for inspection wherever Bid Documents are on file for that purpose.

4.4.3 Except as described herein, addenda shall not be issued within a period of seventy-two (72) hours prior to the advertised time for the opening of bids, excluding Saturdays, Sundays, and any other legal holidays. If the necessity arises of issuing an addendum modifying plans and specifications within the seventy-two (72) hour period prior to the advertised time for the opening of bids, then the opening of bids shall be extended at least seven but no more than twenty-one (21) working days, without the requirement of re-advertising. UL Lafayette Purchasing shall be consulted prior to issuance of such an addendum and shall approve such issuance. The revised time and date for the opening of bids shall be stated in the addendum.

4.4.4 Each Bidder shall ascertain from the Architect prior to submitting his bid that he has received all addenda issued, and he shall acknowledge their receipt on the Bid Form.

4.4.5 The Owner shall have the right to extend the bid date by up to (30) thirty days without the requirement of re-advertising. Any such extension shall be made by addendum issued.

ARTICLE 5

BID PROCEDURE

5.1 Form and Style of Bids

5.1.1 Bids shall be submitted on the Louisiana Uniform Public Work Bid Form provided by the Architect for this Project.

5.1.2 The Bidder shall ensure that all applicable blanks on the bid form are completely and accurately filled in.

5.1.3 Bid sums shall be expressed in both words and figures, and in case of discrepancy between the two, the written words shall govern.

5.1.4 Any interlineation, alteration or erasure must be initialed by the signer of the bid or his authorized representative.

5.1.5 Bidders are cautioned to complete all alternates should such be required on the Bid Form. Failure to submit alternate prices will render the bid non responsive and shall cause its rejection.

5.1.6 Bidders are cautioned to complete all unit prices should such be required in the Bid Form. Unit prices represent a price proposal to do a specified quantity and quality of work. Unit prices are incorporated into the base bid or alternates, as indicated on the Unit Price Form, but are not the sole components thereof.

5.1.7 Bidder shall make no additional stipulations on the Bid Form nor qualify his bid in any other manner.

5.1.8 Written evidence of the authority of the person signing the bid for the public work shall be submitted in accordance with La. R.S. 38:2212 (B)(5).

5.1.9 On any bid in excess of ten thousand dollars ($10,000.00), the Contractor shall certify that he is licensed under La. R.S. 37: 2150-2173 and show his license number on the bid above his signature or his duly authorized representative.

5.2 Bid Security

5.2.1 No bid shall be considered or accepted unless the bid is accompanied by bid security in an amount of five percent (5.0%) of the base bid and all alternates.

The bid security shall be in the form of a certified check, cashier’s check drawn on a bank insured by the Federal Deposit Insurance Corporation, or a Bid Bond written by a surety company licensed to do business in Louisiana and signed by the surety's agent or attorney-in-fact. The surety for the bond must meet the qualifications stated thereon. The Bid Bond shall include the legal name of the bidder be in favor of the University of Louisiana at Lafayette, and shall be accompanied by appropriate power of attorney. The Bid Bond must be signed by both the bidder/principal. Failure by the bidder/principal or the surety to sign the bid bond shall result in the rejection of the bid.

Bid security furnished by the Contractor shall guarantee that the Contractor will, if awarded the work according to the terms of his proposal, enter into the Contract and furnish Performance and Payment Bonds as required by these Bid Documents, within fifteen (15) days after written notice that the instrument is ready for his signature.

Should the Bidder refuse to enter into such Contract or fail to furnish such bonds, the amount of the bid security shall be forfeited to the Owner as liquidated damages, not as penalty.

5.2.2 The Owner will have the right to retain the bid security of Bidders until either (a) the Contract has been executed and bonds have been furnished, or (b) the specified time has elapsed so that bids may be withdrawn, or (c) all bids have been rejected.

5.3 Submission of Bids

See Guidelines for Electronic Submission of Bids and Virtual Bid Openings on page 4 of this solicitation.

5.3.1

The Bid shall be sealed in an opaque envelope. The bid envelope shall be identified on the outside the name, address, and license number of the Bidder.

The envelope shall not contain multiple bid forms, and will be received until the time specified and at the place specified in the Advertisement for Bids. It shall be the specific responsibility of the Bidder to deliver his sealed bid to The University at the appointed place and prior to the announced time for the opening of bids. Late delivery of a bid for any reason, including late delivery by United States Mail, or express delivery, shall disqualify the bid.

If the bid is sent by mail, the sealed envelope shall be enclosed in a separate mailing envelope with the notation "Bid Enclosed" on the face thereof. Such bids shall be sent by Registered or Certified Mail, Return Receipt Requested, addressed to:

University of Louisiana at Lafayette
Purchasing Department,
P. 0. Box 40197
Lafayette, LA 70504

Bids sent by express delivery shall be delivered to:

University of Louisiana at Lafayette
Purchasing Department
Martin Hall, Room 123
104 University Circle
Lafayette, LA 70503

IMPORTANT: Please note that courier services such as UPS, FedEx, and DHL will be UNABLE to deliver to our physical location, as the building may be locked and unstaffed.

5.3.2 Bids shall be deposited at the designated location prior to the time on the date for receipt of bids indicated in the Advertisement for Bids, or any extension thereof made by addendum. Bids received after the time and date for receipt of bids will be returned unopened.

5.3.3 Bidder shall assume full responsibility for timely delivery at location designated for receipt of bids.

5.3.4 Oral, telephonic or telegraphic bids are invalid and shall not receive consideration. Owner shall not consider notations written on outside of bid envelope which have the effect of amending the bid. Written modifications enclosed in the bid envelope, and signed or initialed by the Contractor or his representative, shall be accepted.

5.4 Modification or Withdrawal of Bid

5.4.1 A bid may not be modified, withdrawn or canceled by the Bidder during the time stipulated in the Advertisement for Bids, for the period following the time and bid date designated for the receipt of bids, and Bidder so agrees in submitting his bid, except in accordance with R.S. 38:2214 which states, in part, "Bids containing patently obvious, unintentional, and substantial mechanical, clerical, or mathematical errors, or errors of unintentional omission of a substantial quantity of work, labor, material, or services made directly in the compilation of the bid, may be withdrawn by the contractor if clear and convincing sworn, written evidence of such errors is furnished to the public entity within forty- eight hours of the bid opening excluding Saturdays, Sundays, and legal holidays".

5.4.2 Prior to the time and date designated for receipt of bids, bids submitted early may be modified or withdrawn only by notice to the party receiving bids at the place and prior to the time designated for receipt of bids.

5.4.3 Withdrawn bids may be resubmitted up to the time designated for the receipt of bids provided that they are then

fully in conformance with these Instructions to Bidders.

5.4.4 Bid Security shall be in an amount sufficient for the bid as modified or resubmitted.

5.5 Prohibition of Discriminatory Boycotts of Israel

By submitting a bid, the bidder certifies and agrees that the following information is correct:

In preparing its bid, the bidder has considered all proposals submitted from qualified, potential subcontractors and suppliers, and has not, in the solicitation, selection, or commercial treatment of any subcontractor or supplier, refused to transact or terminated business activities, or taken other actions intended to limit commercial relations, with a person or entity that is engaging in commercial transactions in Israel or Israel-controlled territories, with the specific intent to accomplish a boycott or divestment of Israel. The bidder has also not retaliated against any person or other entity for reporting such refusal, termination, or commercially limiting actions. The state reserves the right to reject any bid if this certification is subsequently determined to be false and to terminate any contract awarded based on such a false response.

ARTICLE 6

CONSIDERATION OF BIDS

6.1 Opening of Bids

See Guidelines for Electronic Submission of Bids and Virtual Bid Openings on page 4 of this solicitation.

6.1.1 The properly identified Bids received on time will be opened publicly and will be read aloud, and a tabulation abstract of the amounts of the base bids and alternates, if any, will be made available to Bidders.

6.2 Rejection of Bids

6.2.1 The Owner shall have the right to reject any or all bids and in particular to reject a bid not accompanied by any required bid security or data required by the Bid Documents or a bid in any way incomplete or irregular.

6.3 Acceptance of Bid

6.3.1 It is the intent of the Owner, if he accepts any alternates, to accept them in the order in which they are listed in the Bid Form. Determination of the Low Bidder shall be on the basis of the sum of the base bid and the alternates accepted. However, the Owner shall reserve the right to accept alternates in any order which does not affect determination of the Low Bidder.

ARTICLE 7

POST-BID INFORMATION

7.1 Submissions

7.1.1 At the Pre-Construction Conference, the Contractor shall submit the following information to the Architect.

7.1.1.1 A designation of the work to be performed by the Contractor with his own forces.

7.1.1.2 A breakdown of the Contract cost attributable to each item listed in the Schedule of Values Form (attached). No payments will be made to the Contractor until this is received.

7.1.1.3 The proprietary names and the suppliers of principal items or systems of material and equipment proposed for the work.

7.1.1.4 A list of names and business domiciles of all Subcontractors, manufacturers, suppliers or other persons or organizations (including those who are to furnish materials or equipment fabricated to a special design) proposed for the principal portions of the work. It is the preference of the Owner that, to the greatest extent possible or practical, the Contractor utilize Louisiana Subcontractors, manufacturers, suppliers and labor.

7.1.2 The General Contractor shall be responsible for actions or inactions of Subcontractors and/or material suppliers.

The General Contractor is totally responsible for any lost time or extra expense incurred due to a Subcontractor's or Material Supplier's failure to perform. Failure to perform includes, but is not limited to, a Subcontractor's financial failure, abandonment of the Project, failure to make prompt delivery, or failure to do work up to standard. Under no circumstances shall the Owner mitigate the General Contractor's losses or reimburse the General Contractor for losses caused by these events.

~~7.1.3 The lowest responsive and responsible bidder shall submit to the Architect and the Owner within ten days after the bid opening a letter/letters from the manufacturer stating that the manufacturer will issue the roof system guarantee complying with the requirements of Facility Planning and Control based on the specified roof system and include the name of the applicator acceptable to the manufacturer at the highest level of certification for installing the specified roof system. This manufacturer shall be one that has received prior approval or is named in the specifications.~~

In accordance with La. R.S. 38:2227 [references La R.S. 38:2212(A)(3)(c)(ii), which has since been renumbered as La R.S. 38:2212(B)(3)], La. R.S. 38:2212.10 and La. R.S. 23:1726(B) the apparent low bidder on this Project shall submit the completed Attestations Affidavit (Past Criminal Convictions of Bidders, Verification of Employees and Certification Regarding Unpaid Workers Compensation Insurance) form found within this bid package to the University of Louisiana at Lafayette within 10 days after the opening of bids**.**

ARTICLE 8
PERFORMANCE AND PAYMENT BOND

8.1 Bond Required

8.1.1 The Contractor shall furnish and pay for a Performance and Payment Bond written by a company licensed to do business in Louisiana, which shall be signed by the surety's agent or attorney-in-fact, in an amount equal to 100% of the Contract amount. Surety must be listed currently on the U. S. Department of Treasury Financial Management Service List (Treasury List) as approved for an amount equal to or greater than the contract amount, or must be an insurance company domiciled in Louisiana or owned by Louisiana residents. If surety is qualified other than by listing on the Treasury list, the contract amount may not exceed fifteen percent of policyholders' surplus as shown by surety's most recent financial statements filed with the Louisiana Department of Insurance and may not exceed the amount of $500,000. However, a Louisiana domiciled insurance company with at least an A- rating in the latest printing of the A. M. Best's Key Rating Guide shall not be subject to the $500,000 limitation, provided that the contract amount does not exceed ten percent of policyholders' surplus as shown in the latest A. M. Best's Key Rating Guide nor fifteen percent of policyholders' surplus as shown by surety's most recent financial statements filed with the Louisiana Department of Insurance. The Bond shall be signed by the surety's agent or attorney-in-fact. The Bond shall be in favor of the University of Louisiana at Lafayette.

8.2 Time of Delivery and Form of Bond

8.2.1 The Bidder shall deliver the required bond to the Owner simultaneous with the execution of the Contract.

8.2.2 A surety company's bid bond form/document will be sufficient for any bid submission.

8.2.3 The Bidder shall require the Attorney-in-Fact who executes the required bond on behalf of the surety to affix thereto a certified and current copy of his power of Attorney.

ARTICLE 9
FORM OF AGREEMENT BETWEEN OWNER AND CONTRACTOR

9.1 Form to be Used

9.1.1 Form of the Contract to be used shall be furnished by the University of Louisiana at Lafayette, an example of which is bound in the Bid Documents.

9.2 Award

9.2.1 After award of the Contract, the successful Bidder, if a corporation, shall furnish to the Owner the most current copy of a Disclosure of Ownership Affidavit on file with the Secretary of State.

9.2.2 In accordance with Louisiana Law, when the Contract is awarded, the successful Bidder shall, at the time of the signing of the Contract, execute the Non-Collusion Affidavit included in the Contract Documents

9.2.3 When this Project is financed either partially or entirely with State Bonds, the award of this Contract is contingent upon the sale of bonds by the State Bond Commission. The State shall incur no obligation to the Contractor until the Contract Between Owner and Contractor is duly executed.

END OF SECTION

SUPPLEMENTARY CONDITIONS

https://www.doa.la.gov/.../27_Supplementary_Conditions_April2018.docx

These Supplementary Conditions modify, change, delete from or add to the General Conditions of the Contract for Construction, AIA Document A201, 2017 Edition. Where any Article of the General Conditions is modified or any Section, Paragraph, Subparagraph or Clause thereof is modified or deleted by these supplements, the unaltered provisions of that Section, Article, Paragraph, Subparagraph or Clause shall remain in effect.

Articles, Sections, Paragraphs, Subparagraphs or Clauses modified or deleted have the same numerical designation as those occurring in the General Conditions.

ARTICLE 1

GENERAL PROVISIONS

1.1 BASIC DEFINITIONS

1.1.1. The Contract Documents

In Section 1.1.1 delete the third sentence, and add the following sentence:

The Contract Documents shall include the Bid Documents as listed in the Instructions to Bidders and any modifications made thereto by addenda.

1.1.8 Initial Decision Maker

Delete all after the words, “shall not show partiality to the Owner or Contractor”.

1.5 OWNERSHIP AND USE OF DRAWINGS, SPECIFICATIONS AND OTHER INSTRUMENTS OF SERVICE [REFER TO *La R.S. 38:2317*]

1.5.1 Delete the first sentence of the paragraph.

1.5.1 In the third sentence: delete the remainder after the word “publication”.

1.7 DIGITAL DATA USE AND TRANSMISSION

In the first sentence after the words, “in digital form” delete “. The parties will use AIA Document E203 2013, Building Information Modeling and Digital Data Exhibit”.

1.8 BUILDING INFORMATION MODELS USE AND RELIANCE

Delete Section 1.8.

ARTICLE 2

OWNER

2.2 EVIDENCE OF THE OWNER'S FINANCIAL ARRANGEMENTS

Delete Section 2.2.

2.3 INFORMATION AND SERVICES REQUIRED OF THE OWNER

2.3.1 In the first sentence, delete: all before "the Owner shall secure…"

Delete Section 2.3.2 and substitute the following:

2.3.2 The term Architect, when used in the Contract Documents, shall mean the prime Designer (Architect, Engineer, or Landscape Architect), or his authorized representative, lawfully licensed to practice architecture, engineering, or landscape architecture in the State of Louisiana, identified as such in the Agreement and is referred to throughout the Contract Documents as if singular in number.

2.3.3 Delete the words: "to whom the Contractor has no reasonable objection and".

ARTICLE 3

CONTRACTOR

3.4 LABOR AND MATERIALS

3.4.2 Delete Section 3.4.2.

Delete Section 3.4.3 and substitute with the following:

3.4.3 Contractor and its employees, officers, agents, representatives, and Subcontractors shall conduct themselves in an appropriate and professional manner, in accordance with the Owner's requirements, at all times while working on the Project. Any such individual who behaves in an inappropriate manner or who engages in the use of inappropriate language or conduct while on Owner's property, as determined by the Owner, shall be removed from the Project at the Owner's request. Such individual shall not be permitted to return without the written permission of the Owner. The Owner shall not be responsible or liable to Contractor or any Subcontractor for any additional costs, expenses, losses, claims or damages incurred by Contractor or its Subcontractor as a result of the removal of an individual from the Owner's property pursuant to this Section. The Contractor shall not permit employment of unfit persons or persons not properly skilled in tasks assigned to them.

3.5 WARRANTY

3.5.2 Replace reference to "Section 9.8.4" with "Section 9.8.6".

3.7 PERMITS, FEES, NOTICES, AND COMPLIANCE WITH LAWS (La R.S. 40:1724[A])

3.7.1 Delete Section 3.7.1.

3.7.2 In Section 3.7.2, replace the word "public" with the word "State".

Delete Section 3.7.5 and substitute the following:

3.7.5 If, during the course of the Work, the Contractor discovers human remains, unmarked burial or archaeological sites, burial artifacts, or wetlands, which are not indicated in the Contract Documents, the Contractor shall follow all procedures mandated by State and Federal law, including but not limited to La R.S. 8:671 et seq., the Office of Coastal Protection and Restoration, and Sections 401 & 404 of the Federal Clean Water Act. Request for adjustment of the Contract Sum and Contract Time arising from the existence of such remains or features shall be submitted in writing to the Owner pursuant to the Contract Documents.

3.8 ALLOWANCES

Delete Sections 3.8.1, 3.8.2, and 3.8.3 in their entirety and add the following new Section 3.8.1:

3.8.1 Allowances shall not be made on any of the Work.

3.9 SUPERINTENDENT

3.9.1 Add the following to the end of the paragraph:
Important communications shall be confirmed in writing. Other communications shall be similarly confirmed on written request in each case.

3.10 CONTRACTOR'S CONSTRUCTION AND SUBMITTAL SCHEDULES

3.10.1 Add the following: For Projects with a contract sum greater than $1,000,000.00, the Contractor shall include with the schedule, for the Owner's and Architect's information, a network analysis to identify those tasks which are on the critical path, i.e., where any delay in the completion of these tasks will lengthen the Project timescale, unless action is taken. A revised schedule shall be submitted with each Application and Certificate for Payment. No payment shall be made until this schedule is received.

3.10.3 In the first sentence, delete the word "general".

After the first sentence, add the following:
If the Work is not on schedule, as determined by the Architect, and the Contractor fails to take action to bring the Work on schedule, then the Contractor shall be deemed in default under this Contract and the progress of the Work shall be deemed unsatisfactory. Such default may be considered grounds for termination by the Owner for cause in accordance with Section 14.2.

Add the following Sections:

3.10.4 Add the following: Submittal by the contractor of a schedule or other documentation showing a completion date for his Work prior to the completion date stated in the contract shall not impose any obligation or responsibility on the Owner or Architect for the earlier completion date.

3.10.5 In the event the Owner employs a commissioning consultant, the Contractor shall cooperate fully in the commissioning process and shall require all subcontractors and others under his control to cooperate. The purpose of such services shall be to ensure that all systems perform correctly and

interactively according to the provisions of the Contract Documents.

3.11 DOCUMENTS AND SAMPLES AT THE SITE

Add the following: This requirement is of the essence of the contract. The Architect shall determine the value of these documents and this amount shall not be approved for payment to the Contractor until all of the listed documents are delivered to the Architect in good order, completely marked with field changes and otherwise complete in all aspects.

ARTICLE 4

ARCHITECT

4.2 ADMINISTRATION OF THE CONTRACT

4.2.1 In the first sentence, delete the phrase: "the date the Architect issues the final Certificate for Payment" and replace with the phrase "final payment is due, and with the Owner's concurrence, from time to time during the one year period for correction of Work described in Section 12.2."

4.2.2 In the first sentence, after the phrase: "become generally familiar with"; insert the following: "and to keep the Owner informed about".

In the first sentence, after the phrase "portion of the Work completed", insert the following: "to endeavor to guard the Owner against defects and deficiencies in the Work,"

4.2.4 In the first sentence, delete all after "The Owner and Contractor", and add the following "may communicate directly with each other, when deemed necessary by the Owner, and the Owner will notify the Architect of any decision."

4.2.10 Add the following sentence to the end of Section 4.2.10: There shall be no restriction on the Owner having a Representative.

4.2.11 Add the following sentence to the end of Section 4.2.11:
If no agreement is made concerning the time within which interpretation required of the Architect shall be furnished in compliance with this Section 4.2, then delay shall not be recognized on account of failure by the Architect to furnish such interpretation until 15 days after written request is made for them.

4.2.14 Insert the following sentence between the second and third sentences of Section 4.2.14:
If no agreement is made concerning the time within which interpretation required of the Architect shall be furnished in compliance with this Section 4.2, then delay shall not be recognized on account of failure by the Architect to furnish such interpretation until 15 days after written request is made for them.

ARTICLE 5

SUBCONTRACTORS

5.2 AWARD OF SUBCONTRACTS AND OTHER CONTRACTS FOR PORTIONS OF THE WORK

Delete Section 5.2.1, and substitute the following:

5.2.1 Unless otherwise required by the Contract Documents, the Contractor shall furnish at the Pre-Construction Conference, to the Owner and the Architect, in writing, the names of the persons or entities (including those who are to furnish materials or equipment fabricated to a special design) proposed for each of the principal portions of the Work. No Contractor payments shall be made until this information is received.

Delete Section 5.2.2, and substitute the following:

5.2.2 The Contractor shall be solely responsible for selection and performance of all subcontractors. The Contractor shall not be entitled to claims for additional time and/or an increase in the contract sum due to a problem with performance or nonperformance of a subcontractor.

Delete Sections 5.2.3 and 5.2.4 and substitute the following:

5.2.3 The Contractor shall notify the Architect and the Owner when a subcontractor is to be changed and substituted with another subcontractor.

5.4 CONTINGENT ASSIGNMENT OF SUBCONTRACTS

Delete Sections 5.4, 5.4.1, 5.4.2 and 5.4.3

ARTICLE 7

CHANGES IN THE WORK

7.1 GENERAL

Add the following Sections:

7.1.4 As part of the pre-construction conference submittals, the Contractor shall submit the following prior to the Contractor's initial request for payment:

7.1.4.1 Fixed job site overhead cost itemized with documentation to support daily rates.

7.1.4.2 Bond Premium Rate with supporting information from the General Contractor's carrier.

7.1.4.3 Labor Burden by trade for both Subcontractors and General Contractor. The Labor Burden shall be supported by the Worker's Compensation and Employer's Liability Insurance Policy Information Page. Provide for all trades.

7.1.4.4 Internal Rate Charges for all significant company owned equipment.

7.1.5 If the General Contractor fails to submit the aforementioned documentation as part of the pre-construction submittals, then pay applications shall not be processed until such time as the Owner receives this information.

7.2 CHANGE ORDERS

Delete Section 7.2.1, and substitute the following Sections:

7.2.1 A Change Order is a written instrument prepared by the Architect and signed by the Owner, the Architect, and the Contractor issued after execution of the Contract, authorizing a change in the Work and/or an adjustment in the Contract Sum and/or the Contract Time. The Contract Sum and the Contract Time may be changed only by Change Order. A Change Order signed by the

Contractor indicates his agreement therewith, including the adjustment in the Contract Sum or the Contract Time. Any reservation of rights, stipulation, or other modification made on the change order by the contractor shall have no effect.

7.2.2 "Cost of the Work" for the purpose of Change Orders shall be the eligible costs required to be incurred in performance of the Work and paid by the Contractor and Subcontractors which eligible costs shall be limited to:

7.2.2.1 Actual wages paid directly to labor personnel, with a labor burden markup exclusively limited to applicable payroll taxes, worker's compensation insurance, unemployment compensation, and social security taxes for those labor personnel performing the Work. Wages shall be the basic hourly labor rate paid an employee exclusive of fringe benefits or other employee costs. The labor burden percentage for the "Cost of the Work" is limited to categories listed herein. Employer-provided health insurance, fringe benefits, employee training (whether a requirement of employment or not), vacation pay, etc., are examples of ineligible labor burden costs which ***shall not*** be included, as these costs are already compensated by the Overhead and Profit markup.

Supervision shall not be included as a line item in the "Cost of the Work", except when the change results in a documented delay in the critical path, as described in Section 7.2.7.

7.2.2.2 Cost of all materials and supplies necessary and required to perform the Work, identifying each item and its individual cost, including taxes. Incidental consumables are not eligible costs and shall not be included.

7.2.2.3 Cost of each necessary piece of machinery and equipment required to perform the Work, identifying each item and its individual cost, including taxes. Incidental small tools of a specific trade (i.e., shovels, saws, hammers, air compressors, etc.,) and general use vehicles, such as pickup trucks even for moving items around the site, fuel for these general use vehicles, travel, lodging, and/or meals are not eligible and shall not be included.

7.2.2.4 Eligible Insurance costs shall be limited to documented increases in "Builder's Risk" insurance premium / costs only. Commercial General Liability, Automobile Liability, and all other required insurances, where referenced in the Contract shall be considered part of normal overhead. These costs are already compensated by the Overhead and Profit markup.

7.2.2.5 Cost for the General Contractor Performance and Payment Bond premium, where the documented cost of the premiums have been increased due to the Change Order.

7.2.3 Overhead and Profit - The Contractor and Subcontractor shall be due home office fixed overhead and profits on the Cost of the Work, but shall not exceed a total of 16% of the direct cost of any portion of Work.

The credit to the Owner resulting from a change in the Work shall be the sum of those items above, except credit will not be required for Overhead and Profit. Where a change results in both credits to the Owner and extras to the Contractor for related items, overhead and profit shall only be computed on the net extra cost to the Contractor.

7.2.4 The cost to the Owner resulting from a change in the Work shall be the sum of: Cost of the Work (as defined at Section 7.2.2) and Overhead and Profit (as defined at Section 7.2.3), and shall be computed as follows:

7.2.4.1 When all of the Work is General Contractor Work; 8% markup on the Cost of the Work.

7.2.4.2 When the Work is all Subcontract Work; 8% markup on the Cost of the Work for Subcontractor's Overhead and Profit, plus 8% markup on the Cost of the Work, not including the Subcontractor's Overhead and Profit markup, for General Contractor's Overhead and Profit.

7.2.4.3 When the Work is a combination of General Contractor Work and Subcontract Work; that portion of the direct cost that is General Contract Work shall be computed per Section 7.2.4.1 and that portion of the direct cost that is Subcontract Work shall be computed per Section 7.2.4.2.

Premiums for the General Contractor's bond may be included, but after the markup is added to the Cost of the Work.
Premiums for the Subcontractor's Bond shall not be included.

7.2.4.4 Subcontract cost shall consist of the items in Section 7.2.2 above plus Overhead and Profit as defined in Section 7.2.3.

7.2.5 Before a Change Order is prepared, the Contractor shall prepare and deliver to the Architect the following information concerning the Cost of the Work, not subject to waiver, within a reasonable time after being notified to prepare said Change Order:

A detailed, itemized list of labor, material and equipment costs for the General Contractor's Work including quantities and unit costs for each item of labor, material and equipment.

An itemized list of labor, material and equipment costs for each Subcontractor's and/or Sub-Subcontractor's Work including quantities and unit costs for each item of labor, material and equipment.

7.2.6 After a Change Order has been approved, no future requests for extensions of time or additional cost shall be considered for that Change Order.

7.2.7 Extended fixed job-site costs are indirect costs that are necessary to support the work in the field. Examples of fixed job-site costs are field office rental, salaries of field office staff, field office utilities and telephone.

Extended fixed job-site costs or equitable adjustment, may be included in a Change Order due to a delay in the critical path, with the exception of weather related delays. In the event of a delay in the critical path, the Contractor shall submit all changes or adjustments to the Contract Time **within twenty-one (21) days** of the event giving rise to the delay. The Contractor shall submit documentation and justification for the adjustment by performing a critical path analysis of its most recent schedule in use prior to the change, which shows an extension in critical path activities. The Contractor shall notify the Architect in writing that the Contractor is making a claim for extended fixed job-site overhead as required by Section 15.1.2. The Contractor shall provide proof

that the Contractor is unable to mitigate financial damages through Alternate Work within this Contract or replacement work. "Replacement Work" is that work which the Contractor is obligated to perform under any construction contract separate from this Contract. Reasonable proof shall be required by the Architect that the delays affected the Completion Date.

7.2.8 "Cost of the Work" whether General Contractor cost or Subcontractor cost shall not apply to the following:

7.2.8.1 Salaries or other compensation of the Contractor's personnel at the Contractor's principal office and branch offices.

7.2.8.2 Any part of the Contractor's capital expenses, including interest on the Contractor's capital employed for the Work.

7.2.8.3 Overhead and general expenses of any kind or the cost of any item not specifically and expressly included above in Cost of the Work.

7.2.8.4 Cost of supervision, refer to section 7.2.2.1, with exception as provided in Section 7.2.7.

7.2.9 When applicable as provided by the Contract, the cost to Owner for Change Orders shall be determined by quantities and unit prices. The quantity of any item shall be as submitted by the Contractor and approved by the Architect. Unit prices shall cover cost of Material, Labor, Equipment, Overhead and Profit.

7.3 CONSTRUCTION CHANGE DIRECTIVES

7.3.3 In the first sentence after "following methods" insert: ", but not to exceed a specified amount".

7.3.4 From .1 of the list, delete all after "Costs of labor, including" and substitute the following "social security, old age and employment insurance, applicable payroll taxes, and workers' compensation insurance;"

Delete the following from .4 of the list: "permit fees,"
Delete Section 7.3.9 and substitute the following:

7.3.9 Pending final determination of the total costs of a Construction Change Directive to the Owner, amounts not in dispute for such changes in the Work shall be included in Applications for Payment accompanied by a Change Order indicating the parties' agreement with part or all of such costs.

ARTICLE 8
TIME

8.1 DEFINITIONS

Add the following:

8.1.5 The Contract Time shall not be changed by the submission of a schedule that shows an early completion date unless specifically authorized by change order.

8.2 PROGRESS AND COMPLETION

Add to Section 8.2.1 the following:

Completion of the Work must be within the Time for Completion stated in the Agreement, subject to such extensions as may be granted under Section 8.3. The Contractor agrees to commence Work not later than fourteen (14) days after the transmittal date of Written Notice to Proceed from the Owner and to substantially complete the Project within the time stated in the Contract. The Owner will suffer financial loss if the Project is not substantially complete in the time set forth in the Contract Documents. The Contractor and the Contractor's Surety shall be liable for and shall pay to the Owner the sum stated in the Contract Documents as fixed, agreed and liquidated damages for each consecutive calendar day (Saturdays, Sundays and holidays included) of delay until the Work is substantially complete. The Owner shall be entitled to the sum stated in the Contract Documents. Such Liquidated Damages shall be withheld by the Owner from the amounts due the Contractor for progress payments.

Delete Section 8.2.2.

8.3 DELAYS AND EXTENSIONS OF TIME

8.3.1 In the first sentence after the words "Owner pending" delete the words "mediation and binding dispute resolution" and add the word "litigation", and delete the last word "determine" and add the following: "recommend, subject to Owner's approval of Change Order. If the claim is not made within the limits of Article 15, all rights for future claims for that month are waived."

ARTICLE 9

PAYMENTS AND COMPLETION

9.1 CONTRACT SUM

Delete Section 9.1.2.

Delete Section 9.2 and substitute the following:

9.2 SCHEDULE OF VALUES

At the Pre-Construction Conference, the Contractor shall submit to the Owner and the Architect a Schedule of Values prepared as follows:

9.2.1 The attached Schedule of Values Format shall be used. If applicable, the cost of Work for each section listed under each division, shall be given. The cost for each section shall include Labor, Materials, Overhead and Profit.

9.2.2 The Total of all items shall equal the Total Contract Sum. This schedule, when approved by the Architect, shall be used as a basis for the Contractor's Applications for Payment and it may be used for determining the cost of the Work in deductive change orders, when a specific item of Work listed on the Schedule of Values is to be removed. Once the Schedule of Values is submitted at the Pre-Construction Conference, the schedule shall not be modified without approval from the Owner and Architect.

9.3 APPLICATIONS FOR PAYMENT

Delete Sections 9.3.1, 9.3.1.1, and 9.3.1.2 and substitute the following:

9.3.1 Monthly, the Contractor shall submit to the Architect an Application & Certificate for Payment on the AIA Document G702-1992, accompanied by AIA Document G703-1992, and supported by any additional data substantiating the Contractor's right to payment as the Owner or

the Architect may require. Application for Payment shall be submitted on or about the first of each month for the value of labor and materials incorporated into the Work and of materials, suitably stored, at the site as of the twenty-fifth day of the preceding month, less normal retainage as follows, per La R.S. 38:2248:

9.3.1.1 Projects with Contract price up to $500,000.00 – 10% of the Contract price.

9.3.1.2 Projects with Contract price of $500,000.00, or more – 5% of the Contract price.

9.3.1.3 No payment shall be made until the revised schedule required by Section 3.10.1 is received.

9.3.1.4 The normal retainage shall not be due the Contractor until after substantial completion and expiration of the forty-five day lien period and submission to the Architect of a clear lien certificate, consent of surety, and invoice for retainage.

Delete Section 9.3.2 and substitute the following:

9.3.2 Unless otherwise provided in the Contract Documents, payments shall be made on account of materials and equipment delivered and suitably stored at the site for subsequent incorporation in the Work. Payments for materials or equipment stored on the site shall be conditioned upon submission by the Contractor of bills of sale or such other procedures satisfactory to the Owner to establish the Owner's title to such materials and equipment or otherwise protect the Owner's interest, including applicable insurance.

9.5 DECISIONS TO WITHHOLD CERTIFICATION

Section 9.5.1.7: Delete the word "repeated".

Delete Section 9.5.4.

9.6 PROGRESS PAYMENTS

Delete Section 9.6.1 and substitute the following:

9.6.1 After the Architect has issued a Certificate for Payment, the Owner shall make payment within twenty days except for Projects funded fully or in part by a Federal reimbursement program. For such Projects the Owner will make payment in a timely manner consistent with reimbursement.

9.6.2 Delete the phrase: "no later than seven days" from the first sentence.

After the end of the second sentence, add the following:

La R.S. 9:2784 (A) and (C) require a Contractor or Subcontractor to make payment due to each Subcontractor and supplier within fourteen (14) consecutive days of the receipt of payment from the Owner. If not paid, a penalty in the amount of ½ of 1% per day is due, up to a maximum of 15% from the expiration date until paid. The contractor or subcontractor, whichever is applicable, is solely responsible for payment of a penalty.

9.6.4 Delete the first two sentences of Section 9.6.4 and add the following to the end of the Section:

Pursuant to La. R.S. 38:2242 and La. R.S. 38:2242.2, when the Owner receives any claim of nonpayment arising out of the Contract, the Owner shall deduct 125% of such claim from the Contract Sum. The Contractor, or any interested party, may deposit security, in accordance with

La. R.S. 38:2242.2, guaranteeing payment of the claim with the recorder of mortgages of the parish where the Work has been done. When the Owner receives original proof of such guarantee from the recorder of mortgages, the claim deduction will be added back to the Contract Sum.

Delete Section **9.7 FAILURE OF PAYMENT**.

Delete Section 9.8 and substitute the following:

9.8 SUBSTANTIAL COMPLETION

9.8.1 Substantial Completion is the stage in the progress of the Work when the Work is sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use. The Architect shall determine if the Project is substantially complete in accordance with this Section.

9.8.2 When the Contractor considers that the Work is Substantially Complete, the Contractor shall prepare and submit to the Architect a comprehensive list of items to be completed or corrected prior to final payment. Failure to include an item on such list does not alter the responsibility of the Contractor to complete all Work in accordance with the Contract Documents.

9.8.3 Upon receipt of the Contractor's list, the Architect shall make an inspection to determine whether the Work is substantially complete. A prerequisite to the Work being considered as substantially complete is the Owner's receipt of the executed Roofing Contractor's and Roofing Manufacturer's guarantees, where roofing Work is part of the Contract. Prior to inspection by the Architect, the Contractor shall notify the Architect that the Project is ready for inspection by the State Fire Marshal's office. If the Architect's inspection discloses any item, whether or not included on the Contractor's list, which is not sufficiently complete in accordance with the Contract Documents so that the Owner can occupy or utilize the Work for its intended use, the Contractor shall, before the Work can be considered as Substantially Complete, complete or correct such item upon notification by the Architect. In such case, the Contractor shall then submit a request for another inspection by the Architect to determine Substantial Completion.

9.8.4 When the Architect determines that the Project is Substantially Complete, he shall prepare a punch list of exceptions and the dollar value related thereto. The monetary value assigned to this list will be the sum of the cost estimate for each particular item of Work the Architect develops based on the mobilization, labor, material and equipment costs of correcting the item and shall be retained from the monies owed the contractor, above and beyond the standard lien retainage. The cost of these items shall be prepared in the same format as the schedule of values. At the end of the forty-five day lien period payment shall be approved for all punch list items completed up to that time. After that payment, none of the remaining funds shall be due the contractor until all punch list items are completed and are accepted by the Architect. If the dollar value of the punch list exceeds the amount of funds, less the retainage amount, in the remaining balance of the Contract, then the Project shall not be considered as substantially complete. If funds remaining are less than that required to complete the Work, the Contractor shall pay the difference.

9.8.5 When the preparation of the punch list is complete the Architect shall prepare a Recommendation of Acceptance incorporating the punch list and submit it to the Owner. Upon approval of the Recommendation of Acceptance, the Owner may issue a Notice of Acceptance of

Building Contract which shall establish the Date of Substantial Completion. The Contractor shall record the Notice of Acceptance with the Clerk of Court in the Parish in which the Work has been performed. If the Notice of Acceptance has not been recorded seven (7) days after issuance, the Owner may record the Acceptance at the Contractor's expense. All additive change orders must be processed before issuance of the Recommendation of Acceptance. The Owner shall not be responsible for payment for any Work associated with change orders that is not incorporated into the contract at the time of the Recommendation of Acceptance.

9.8.6 Warranties required by the Contract Documents shall commence on the date of Acceptance of the Work unless otherwise agreed to in writing by the Owner and Contractor. Unless otherwise agreed to in writing by the Owner and Contractor, security, maintenance, heat, utilities, damage to the Work not covered by the punch list and insurance shall become the Owner's responsibility on the Date of Substantial Completion.

9.8.7 If all punch list items have not been completed by the end of the forty-five (45) day lien period, through no fault of the Architect or Owner, the Owner may hold the Contractor in default. If the Owner finds the Contractor is in default, the Surety shall be notified. If within forty-five (45) days after notification, the Surety has not completed the punch list, through no fault of the Architect or Owner, the Owner may, at his option, contract to have the balance of the Work completed and pay for such Work with the unpaid funds remaining in the Contract sum. Finding the Contractor in default shall constitute a reason for disqualification of the Contractor from bidding on future state contracts. If the surety fails to complete the punch list within the stipulated time period, the Owner may not accept bonds submitted, in the future, by the surety.

9.9 PARTIAL OCCUPANCY OR USE

Delete Section 9.9.1 and substitute the following:

9.9.1 Partial Occupancy is that stage in the progress of the Work when a designated portion of the Work is sufficiently complete in accordance with the Contract Documents so the Owner can occupy or utilize the designated portion of the Work for its intended use. The Owner may occupy or use any substantially completed portion of the Work so designated by separate agreement with the Contractor and authorized by public authorities having jurisdiction over the Work. Such occupancy or use may commence provided the Owner and Contractor have accepted in writing the responsibilities assigned to each of them for payments, if any, security, maintenance, heat, utilities, damage to the Work and insurance, and have agreed in writing concerning the period for correction of the Work and commencement of warranties required by the Contract Documents. When the Contractor considers the designated portion substantially complete the Contractor shall prepare and submit a list to the Architect as provided under Section 9.8.2. Consent of the Contractor to partial occupancy or use shall not be unreasonably withheld.

9.10 FINAL COMPLETION AND FINAL PAYMENT

9.10.1 After the second sentence, add the following:

If the Architect does not find the Work acceptable under the Contract Documents, the Architect shall make one additional inspection; if the Work is still not acceptable, the Architect, and each of the Architect's principal consultants, shall be paid $175.00/hour for their time at the Project site, for each additional inspection, to be withheld from the unpaid funds remaining in the Contract sum. The payment shall be made by the Owner and deducted from the construction contract funds.

Delete Section 9.10.4 and replace with the following:

9.10.4 The making of final payment shall not constitute a waiver of Claims by the Owner for the following:

9.10.4.1 Claims, security interests, or encumbrances arising out of the Contract and unsettled;

9.10.4.2 failure of the Work to comply with the requirements of the Contract Documents irrespective of when such failure is discovered;

9.10.4.3 terms of special warranties required by the Contract Documents; or

9.10.4.4 audits performed by the Owner, after final payment.

ARTICLE 10

PROTECTION OF PERSONS AND PROPERTY

10.2 SAFETY OF PERSONS AND PROPERTY

10.2.2 In the first sentence, between the words: "bearing on" and "safety", add the words: "the health and,"

10.3 HAZARDOUS MATERIALS

10.3.1 In the second sentence after (PCB) add: "or lead".

10.3.2 After the first sentence, delete all remaining sentences.

Add at the end: "The Contract time shall be extended appropriately."

Delete Section 10.4 and substitute the following:

10.4 EMERGENCIES

In an emergency affecting the safety of persons or property, the Contractor shall notify the Owner and Architect immediately of the emergency, simultaneously acting at his discretion to prevent damage, injury or loss. Any additional compensation or extension of time claimed by the Contractor on account of emergency Work shall be determined as provided in Article 15 and Article 7.

ARTICLE 11
INSURANCE AND BONDS

AIA A101 – 2017 Exhibit A is not a part of these documents. Delete all of Sections 11.1, 11.2, 11.3, 11.4, and 11.5, and substitute the following:

INSURANCE REQUIREMENTS FOR NEW CONSTRUCTION, ADDITIONS AND RENOVATIONS

11.1 CONTRACTOR'S LIABILITY INSURANCE

The Contractor shall purchase and maintain without interruption for the duration of the contract insurance against claims for injuries to persons or damages to property which may arise from or in

connection with the performance of the Work hereunder by the Contractor, its agents, representatives, employees or subcontractors. The duration of the contract shall be from the inception of the contract until the date of final payment.

11.2 MINIMUM SCOPE AND LIMITS OF INSURANCE

11.2.1 Worker's Compensation

Worker's Compensation insurance shall be in compliance with the Worker's Compensation law of the Contractor's headquarters. Employers Liability is included with a minimum limit of $1,000,000 per accident/per disease/per employee. If Work is to be performed over water and involves maritime exposure, applicable LHWCA, Jones Act or other maritime law coverage shall be included. A.M. Best's insurance company rating requirement may be waived for Worker's compensation coverage only.

11.2.2 Commercial General Liability

Commercial General Liability insurance, including Personal and Advertising Injury Liability and Products and Completed Operations Liability, shall have a minimum limit per occurrence based on the Project value. The Insurance Services Office (ISO) Commercial General Liability occurrence coverage form CG 00 01 (current form approved for use in Louisiana), or equivalent, is to be used in the policy. Claims-made form is unacceptable.
The aggregate loss limit must apply to each Project. ISO form CG 25 03 (current form approved for use in Louisiana), or equivalent, shall also be submitted. The State Project number, including part number, and Project name shall be included on this endorsement.

COMBINED SINGLE LIMIT (CSL) PER OCCURRENCE

Type of Construction	**Projects up to $1,000,000**	**Projects over $1,000,000 up to $10,000,000**	**Projects over $10,000,000**
New Buildings:			
Each Occurrence Minimum Limit	$1,000,000	$2,000,000	$4,000,000
Per Project Aggregate	$2,000,000	$4,000,000	$8,000,000
Renovations:	**The building(s) value for the Project is $_____.**		
Each Occurrence Minimum Limit	$1,000,000**	$2,000,000**	$4,000,000**
Per Project Aggregate	2 times per occur limit**	2 times per occur limit**	2 times per occur limit**

**While the minimum Combined Single Limit of $1,000,000 is required for any renovation, the limit is calculated by taking 10% of the building value and rounding it to the nearest $1,000,000 to get the insurance limit. Example: Renovation on a $33,000,000 building would have a calculated $3,000,000 combined single limit of coverage (33,000,000 times .10 = 3,300,000 and then rounding down to $3,000,000). If the calculated limit is less than the minimum limit listed in the above chart, then the amount needed is the minimum listed in the chart. Maximum per occurrence limit required is $10,000,000 regardless of building value. The per Project aggregate limit is then calculated as twice the per occurrence limit.

11.2.3 Automobile Liability

Automobile Liability Insurance shall have a minimum combined single limit per occurrence of $1,000,000. ISO form number CA 00 01 (current form approved for use in Louisiana), or equivalent, is to be used in the policy. This insurance shall include third-party bodily injury and property damage liability for owned, hired and non-owned Automobiles.

11.2.4 Excess Umbrella

Excess Umbrella Insurance may be used to meet the minimum requirements for General Liability and Automobile Liability only.

11.2.5 Builder's Risk

11.2.5.1 Builder's Risk Insurance shall be in an amount equal to the amount of the construction contract including any amendments and shall be upon the entire Work included in the contract. The policy shall provide coverage equivalent to the ISO form number CP 10 20, Broad Form Causes of Loss (extended, if necessary, to include the perils of wind, earthquake, collapse, vandalism/malicious mischief, and theft, including theft of materials whether or not attached to any structure). The policy must include architects' and engineers' fees necessary to provide plans, specifications and supervision of Work for the repair and/or replacement of property damage caused by a covered peril, not to exceed 10% of the cost of the repair and/or replacement.

11.2.5.2 Flood coverage shall be provided by the Contractor on the first floor and below for all Projects, except as otherwise noted. The builder's risk insurance policy, sub-limit for flood coverage shall not be less than ten percent (10%) of the total contract cost per occurrence. If flood is purchased as a separate policy, the limit shall be ten percent (10%) of the total contract cost per occurrence (with a max of $500,000 if NFIP). Coverage for roofing Projects shall **not** require flood coverage.

11.2.5.3 A Specialty Contractor may provide an installation floater in lieu of a Builder's Risk policy, with the similar coverage as the Builder's Risk policy, upon the system to be installed in an amount equal to the amount of the contract including any amendments. Flood coverage is not required.

11.2.5.4 The policy must include coverage for the Owner, Contractor and any subcontractors as their interests may appear.

11.2.6 Pollution Liability *(required when asbestos or other hazardous material abatement is included in the contract)*

Pollution Liability insurance, including gradual release as well as sudden and accidental, shall have a minimum limit of not less than $1,000,000 per claim. A claims-made form will be acceptable. A policy period inception date of no later than the first day of anticipated Work under this contract and an expiration date of no earlier than 30 days after anticipated completion of all Work under the contract shall be provided. There shall be an extended reporting period of at least 24 months, with full reinstatement of limits, from the expiration date of the policy if the policy is not renewed. The policy shall not be cancelled for any reason, except non-payment of premium.

11.2.7 Deductibles and Self-Insured Retentions

Any deductibles or self-insured retentions must be declared to and accepted by the Owner. The Contractor shall be responsible for all deductibles and self-insured retentions.

11.3 OTHER INSURANCE PROVISIONS

11.3.1 The policies are to contain, or be endorsed to contain, the following provisions:

11.3.1.1 Worker's Compensation and Employers Liability Coverage

11.3.1.1.1 To the fullest allowed by law, the insurer shall agree to waive all rights of subrogation against the Owner, its officers, agents, employees and volunteers for losses arising from Work performed by the Contractor for the Owner.

11.3.1.2 Commercial General Liability Coverage

11.3.1.2.1 The Owner, its officers, agents, employees and volunteers are to be added as additional insureds as respects liability arising out of activities performed by or on behalf of the Contractor; products and completed operations of the Contractor, premises owned, occupied or used by the Contractor. ISO Form CG 20 10 (for ongoing work) AND CG 20 37 (for completed work) (current forms approved for use in Louisiana), or equivalent, are to be used.

11.3.1.2.2 The Contractor's insurance shall be primary as respects the Owner, its officers, agents, employees and volunteers for any and all losses that occur under the contract. The coverage shall contain no special limitations on the scope of protection afforded to the Owner, its officers, officials, employees or volunteers. Any insurance or self-insurance maintained by the Owner shall be excess and non-contributory of the Contractor's insurance.

11.3.1.3 Builder's Risk

The policy must include an endorsement providing the following:
In the event of a disagreement regarding a loss covered by this policy, which may also be covered by a State of Louisiana self-insurance or commercial property policy through the Office of Risk Management (ORM), Contractor and its insurer agree to follow the following procedure to establish coverage and/or the amount of loss:

Any party to a loss may make written demand for an appraisal of the matter in disagreement. Within 20 days of receipt of written demand, the Contractor's insurer and either ORM or its commercial insurance company shall <u>each</u> select a competent and impartial appraiser and notify the other of the appraiser selected. The two appraisers shall select a competent and impartial umpire. The appraisers shall then identify the policy or policies under which the loss is insured and, if necessary, state separately the value of the property and the amount of the loss that must be borne by each policy. If the two appraisers fail to agree, they shall submit their differences to the umpire. A written decision by any two shall determine the policy or policies and the amount of the loss. Each insurance company agrees that the decision of the appraisers and the umpire if involved shall be binding and final and that neither party will resort to litigation. Each of the two parties shall pay its chosen appraiser and bear the cost of the umpire equally.

11.3.1.4 All Coverages

11.3.1.4.1 All policies must be endorsed to require 30 days written notice of cancellation to the Agency. Ten-day written notice of cancellation is acceptable for non-payment of premium. Notifications shall comply with the standard

cancellation provisions in the Contractor's policy. In addition, Contractor is required to notify Agency of policy cancellations or reductions in limits.

11.3.1.4.2 Neither the acceptance of the completed Work nor the payment thereof shall release the Contractor from the obligations of the insurance requirements or indemnification agreement.

11.3.1.4.3 The insurance companies issuing the policies shall have no recourse against the Owner for payment of premiums or for assessments under any form of the policies.

11.3.1.4.4 Any failure of the Contractor to comply with reporting provisions of the policy shall not affect coverage provided to the Owner, its officers, agents, employees and volunteers.

11.3.2 Acceptability of Insurers

All required insurance shall be provided by a company or companies lawfully authorized to do business in the jurisdiction in which the Project is located. Insurance shall be placed with insurers with an A.M. Best's rating of **A-: VI or higher**. This rating requirement may be waived for Worker's compensation coverage only.

If at any time an insurer issuing any such policy does not meet the minimum A.M. Best rating, the Contractor shall obtain a policy with an insurer that meets the A.M. Best rating and shall submit another certificate of insurance within 30 days.

11.3.3 Verification of Coverage

Contractor shall furnish the Owner with Certificates of Insurance reflecting proof of required coverage. The Certificates for each insurance policy are to be signed by a person authorized by that insurer to bind coverage on its behalf. The Certificates are to be received and approved by the Owner before Work commences and upon any contract renewal or insurance policy renewal thereafter. The Certificate Holder must be listed as follows:

State of Louisiana
University of Louisiana at Lafayette
PO Box 40197
Lafayette, LA 70504
Ref: Solicitation File No. _____

The Owner reserves the right to request complete certified copies of all required insurance policies at any time.

Upon failure of the Contractor to furnish, deliver and maintain required insurance, this contract, at the election of the Agency, may be suspended, discontinued, or terminated. Failure of the Contractor to purchase and/or maintain any required insurance shall not relieve the Contractor from any liability or indemnification under the contract.

If the Contractor does not meet the insurance requirements at policy renewal, at the option of the Owner, payment to the Contractor may be withheld until the requirements have been met, OR the Owner may pay the renewal premium and withhold such payment from any monies due the Contractor, OR the contract may be suspended or terminated for cause.

11.3.4 Subcontractors

Contractor shall include all subcontractors as insureds under its policies OR shall be responsible for verifying and maintaining the certificates provided by each subcontractor. Subcontractors shall be subject to all of the requirements stated herein. The Owner reserves the right to request copies of subcontractor's certificates at any time.

If Contractor does not verify subcontractors' insurance as described above, Owner has the right to withhold payments to the Contractor until the requirements have been met.

11.3.5 Worker's Compensation Indemnity

In the event Contractor is not required to provide or elects not to provide Worker's compensation coverage, the parties hereby agree the Contractor, its Owners, agents and employees shall have no cause of action against, and shall not assert a claim against, the state of Louisiana, its departments, agencies, agents and employees as an employer, whether pursuant to the Louisiana Worker's Compensation Act or otherwise, under any circumstance. The parties also hereby agree that the State of Louisiana, its departments, agencies, agents and employees shall in no circumstance be, or considered as, the employer or statutory employer of Contractor, its Owners, agents and employees. The parties further agree that Contractor is a wholly independent Contractor and is exclusively responsible for its employees, Owners, and agents. Contractor hereby agrees to protect, defend, indemnify and hold the State of Louisiana, its departments, agencies, agents and employees harmless from any such assertion or claim that may arise from the performance of this contract.

11.3.6 Indemnification/Hold Harmless Agreement

Contractor agrees to protect, defend, indemnify, save, and hold harmless, the State of Louisiana, all State Departments, Agencies, Boards and Commissions, its officers, agents, servants, employees and volunteers, from and against any and all claims, damages, expenses and liability arising out of injury or death to any person or the damage, loss or destruction of any property which may occur, or in any way grow out of, any act or omission of Contractor, its agents, servants and employees, or any and all costs, expenses and/or attorney fees incurred by Contractor as a result of any claims, demands, suits or causes of action, except those claims, demands, suits or causes of action arising out of the negligence of the State of Louisiana, all State Departments, Agencies, Boards, Commissions, its officers, agents, servants, employees and volunteers.

Contractor agrees to investigate, handle, respond to, provide defense for and defend any such claims, demands, suits or causes of action at its sole expense and agrees to bear all other costs and expenses related thereto, even if the claims, demands, suits, or causes of action are groundless, false or fraudulent. The State of Louisiana may, but is not required to, consult with the Contractor in the defense of claims, but this shall not affect the Contractor's responsibility for the handling and expenses of all claims.

11.4 PERFORMANCE AND PAYMENT BOND

11.4.1 The Owner shall have the right to require the Contractor to furnish bonds covering faithful performance of the Contract and payment of obligations arising thereunder as stipulated in bidding requirements or specifically required in the Contract Documents on the date of execution of the Contract.

11.4.2 Upon the request of any person or entity appearing to be a potential beneficiary of bonds covering payment of obligations arising under the Contract, the Contractor shall promptly furnish a copy of the bonds or shall authorize a copy to be furnished.

11.4.3 Recordation of Contract and Bond [La R.S. 38:2241 thru 38:2241.1]

The *Owner shall require the Contractor to record* within thirty (30) days the Contract Between Owner and Contractor and Performance and Payment Bond with the Clerk of Court in the Parish in which the Work is to be performed.

ARTICLE 12

UNCOVERING AND CORRECTION OF WORK

12.2 CORRECTION OF WORK

12.2.1 Before Substantial Completion

At the end of the paragraph, add the following sentences:
"If the Contractor fails to correct Work identified as defective within a thirty (30) day period, through no fault of the Designer, the Owner may hold the Contractor in default. If the Owner finds the Contractor in default, the Surety shall be notified. If within thirty (30) days after notification, the Surety has not corrected the nonconforming Work, through no fault of the Architect or Owner, the Owner may contract to have nonconforming Work corrected and hold the Surety and Contractor responsible for the cost, including architectural fees and other indirect costs. If the Surety fails to correct the Work within the stipulated time period and fails to meet its obligation to pay the costs, the Owner may elect not to accept bonds submitted in the future by the Surety. Finding the Contractor in default shall constitute a reason for disqualification of the Contractor from bidding on future state contracts.

12.2.2 After Substantial Completion

12.2.2.1 At the end of the paragraph delete the last sentence and add the following sentences:
"If the Contractor fails to correct nonconforming Work, or Work covered by warranties, within a thirty (30) day period, through no fault of the Architect or Owner, the Owner may hold the Contractor in default. If the Owner finds the Contractor is in default, the Surety shall be notified. If within thirty (30) days after notification, the Surety has not corrected the non-conforming or warranty Work, through no fault of the Architect or Owner, the Owner may contract to have the nonconforming or warranty Work corrected and hold the Surety responsible for the cost including architects fees and other indirect costs. Corrections by the Owner shall be in accordance with Section 2.4. If the Surety fails to correct the nonconforming or warranty Work within the stipulated time period and fails to meet its obligation to pay the costs, the Owner may not accept bonds submitted, in the future, by the Surety."

ARTICLE 13

MISCELLANEOUS PROVISIONS

13.1 GOVERNING LAW

Delete all after the word "located".

13.2 SUCCESSORS AND ASSIGNS

13.2.1 In the second sentence, delete "Except as … 13.2.2"

Delete Section 13.2.2.

13.3 RIGHTS AND REMEDIES

Add the following Section 13.3.3:

13.3.3 The Nineteenth Judicial Court in and for the Parish of East Baton Rouge, State of Louisiana shall have sole jurisdiction and venue in any action brought under this contract.

13.4 TESTS AND INSPECTIONS

In Section 13.4.1, delete the second sentence and substitute the following:

The Contractor shall make arrangements for such tests, inspections and approvals with the Testing Laboratory provided by the Owner, and the Owner shall bear all related costs of tests, inspections and approvals.

Delete the last two sentences of Section 13.4.1.

13.5 INTEREST

Delete Section 13.5.

ARTICLE 14

TERMINATION OR SUSPENSION OF THE CONTRACT

14.1 TERMINATION BY THE CONTRACTOR

Delete Section 14.1.1.4.

In Section 14.1.3, after the word "profit," delete the words "on Work not executed" and substitute the following: "for Work completed prior to stoppage".

14.2 TERMINATION BY THE OWNER FOR CAUSE

Add the following Section:

14.2.1.5 failure to complete the punch list within the lien period as provided in 9.8.7.

14.2.3 Add the following sentence:

"Termination by the Owner shall not suspend assessment of liquidated damages against the Surety."

Add the following Section:

14.2.5 If an agreed sum of liquidated damages has been established, termination by the Owner under this Article shall not relieve the Contractor and/or Surety of his obligations under the liquidated damages provisions and the Contractor and/or Surety shall be liable to the Owner for per diem liquidated damages.

14.4 TERMINATION BY THE OWNER FOR CONVENIENCE

In Section 14.4.3, delete all after "incurred by reason of the termination," and add "along with reasonable profit on the Work not executed."

ARTICLE 15

CLAIMS AND DISPUTES

15.1 CLAIMS

Delete Section 15.1.2, **Time Limit on Claims,** (See La R.S. 38:2189, and 38:2189.1).

15.1.3.1 Add the following to the end of the paragraph:
"A Reservation of Rights and similar stipulations shall not be recognized under this contract as having any effect. A party must make a claim as defined herein within the time limits provided."

15.1.4.2 In the first sentence of the Section, delete "Initial Decision Maker's" and replace with "Architect's". In the second sentence of the Section, delete "the decision of the Initial Decision Maker" and replace with: "his/her decision".

Delete Section 15.1.6.2 and substitute the following:

15.1.6.2 If adverse weather conditions are the basis for a claim for additional time, the Contractor shall document that weather conditions had an adverse effect on the scheduled construction. An increase in the contract time due to weather shall not be cause for an increase in the contract sum. At the end of each month, the Contractor shall make one Claim for any adverse weather days occurring within the month. The Claim must be accompanied by sufficient documentation evidencing the adverse days and the impact on construction. Failure to make such Claim within **twenty-one (21) days** from the last day of the month shall prohibit any future claims for adverse days for that month. No additional adverse weather days shall be granted after the original or extended contract completion date, except those adverse weather days associated with a National Weather Service named storm or federally declared weather related disaster directly affecting the Project site.

Add the following Section:

15.1.6.3 The following are considered reasonably anticipated days of adverse weather on a monthly basis:

January	11 days	July	6 days
February	10 days	August	5 days
March	8 days	September	4 days
April	7 days	October	3 days
May	5 days	November	5 days
June	6 days	December	8 days

The Contractor shall ask for total adverse weather days. The Contractor's request shall be considered only for days over the allowable number of days stated above.

Note:Contract is on a calendar day basis.

15.2 INITIAL DECISION

15.2.1 In the second sentence, delete the word "will" and replace with: "shall always".

In the second sentence, delete the phrase: ", unless otherwise indicated in the Agreement."

In the third sentence, delete the word "mediation" and replace with: "litigation".

At the end of the third sentence, add: "arising prior to the date final payment is due".

Delete the fourth sentence.

15.2.5 In the middle of the first sentence, delete all after the phrase: "rejecting the Claim".

In the second sentence, delete the phrase: "and the Architect, if the Architect is not serving as the Initial Decision Maker,".

In the third sentence, delete all after: "binding on the parties" and add the following: "except that the Owner may reject the decision or suggest a compromise or both".

Delete Section 15.2.6.

Delete Section 15.2.6.1.

15.3 MEDIATION

Delete Section 15.3.

15.4 ARBITRATION

Delete Section 15.4.

END OF SECTION

INSURANCE REQUIREMENTS *Revised February 2019*

(for contractors doing business with the University of Louisiana at Lafayette)

I. Purpose and Scope

The purpose of this document is to ensure that third parties doing business with the University are adequately insured for the risk and liability associated with the goods, services, and/or work they provide to the University. This document sets forth the insurance language to be included in the bid and/or contract specifications when hiring contractors, vendors, or service providers to provide goods, perform services, and/or perform work for the University ("Contractors"). This document also sets forth the insurance language that should be included in all University contracts with Contractors ("Contracts"). This document applies to all Contracts to which the University is a party, including the individual departments and units of the University.

II. General Insurance Requirements

Except as expressly provided below with regard to Reduced Limits for Special Circumstances, the following language shall be included in (1) all Contractor bid and contract specifications, and (2) all Contracts. Requests for other variations in this language must be reviewed by the University's Risk Manager, who will make the final decision as to the language to be used. Please note that hazardous, unusual or exceptional activities, or a change in Contract indemnification provisions, may necessitate additional insurance; questions regarding the need for other coverage should be directed to the University's Risk Manager.

Contractor shall purchase, at its own cost and expense, and maintain for the duration of the Contract, insurance against claims for injuries to persons or damages to property which may arise from or in connection with the performance of the work hereunder by Contractor, its agents, representatives, employees, or subcontractors. The insurance shall be obtained from a company or companies lawfully authorized to do business in the State of Louisiana with a A.M. Best's rating of A-:VI or higher. Failure to comply with all terms of this section for the duration of the Contract places Contractor in breach of this Contract. Requests for any variation in this language will be reviewed by University's Risk Manager, who will make the final decision.

A. Minimum Scope of Insurance and Limits

1. Workers Compensation

Contractor shall be in compliance at all times with the Louisiana Workers' Compensation Law with respect to workers' compensation insurance or proper certification of self-insured status.

2. Commercial General Liability

Contractor shall maintain Commercial General Liability insurance, including Personal and Advertising Injury Liability, which coverage shall have a minimum limit per occurrence of $1,000,000 and a minimum general aggregate of $2,000,000. The Insurance Services Office (ISO) Commercial General Liability occurrence coverage form CG 00 01 (current form approved for use in Louisiana), or equivalent, is to be used in the policy. Claims-made form is unacceptable.

Additionally, if alcohol is served in the execution of this Contract, then Contractor shall maintain Liquor Liability coverage in the minimum amount of $1,000,000 per occurrence.

Additionally, if valet parking is performed in the execution of this Contract, then Contractor shall maintain Garage Keepers Liability coverage in the minimum amount of $1,000,000 per occurrence.

3. Automobile Liability (if a Motor Vehicle owned, hired, or rented by the contractor is used in the performance of this Contract)

Contractor shall maintain Automobile Liability Insurance, which coverage shall have a minimum combined

single limit per occurrence of $1,000,000. ISO form number CA 00 01 (current form approved for use in Louisiana), or equivalent, is to be used in the policy. This insurance shall include third-party bodily injury and property damage liability for owned, hired, and non-owned automobiles.

B. Other Insurance Provisions

Contractor shall either (i) require each subcontractor and vendor to procure and maintain all applicable insurance of the type and limits specified in this section, or (ii) include all subcontractors as insureds under its policies.

Any deductibles or self-insured retentions must be declared to and accepted by University. Contractor shall be responsible for all deductibles and self-insured retentions. Any insurance or self-insurance maintained by University shall be excess and non-contributory of Contractor's insurance. Contractor's coverage shall contain no special limitations on the scope of protection afforded to University. Contractor's insurance shall be primary as respects University, The Board of Supervisors for the University of Louisiana System ("Board"), and all of their respective officers, agents, employees, and volunteers.

Except for workers' compensation coverage, University and Board, and all of their respective officers, agents, employees, and volunteers, shall be named as an additional insured as regards negligence by Contractor. ISO Form CG 20 10 (current form approved for use in Louisiana), or equivalent, is to be used when applicable.

Contractor shall provide to University Certificates of Insurance ("Certificates") evidencing the foregoing coverage in advance of Contractor's delivery of goods and/or performance of work or services, and in all events, prior to any payment by University to Contractor. In addition to Certificates, Contractor shall submit to University the declarations page and the cancellation provisions for each insurance policy. University reserves the right to request complete certified copies of all required insurance policies at any time.

Certificates and all notices regarding coverage shall be addressed to:

University of Louisiana at Lafayette
ATTN: Purchasing Department
P.O. Box 40197
Lafayette, LA 70504

Certificates of Insurance shall reflect that, to the fullest extent allowed by law, the insurer shall agree to waive all rights of subrogation against University, its officers, agents, employees, and volunteers for losses arising from work performed by the Contractor for University.

Coverage shall not be canceled, suspended, reduced, or voided by either Contractor or the insurer except after 30 days written notice has been given to University. Ten-day written notice of cancellation is acceptable for non-payment of premium. Notifications shall comply with the standard cancellation provisions in Contractor's policy.

Acceptance of goods or completed work by University, payment by University, failure of University to require proof of compliance, or University's acceptance of a non-compliant Certificate shall not release Contractor from its obligations under these insurance requirements. Failure of Contractor to purchase and/or maintain any required insurance shall not relieve Contractor from any liability or indemnification under the Contract.

III. <u>Additional Insurance Requirements for Special Contracts</u>

In addition to the foregoing insurance requirements, language specifying the following insurance requirements shall be included in: (1.) all bid and contract specifications for professional services and (2.) all Contracts for professional services, where applicable:

A. Professional Liability, Errors and Omissions, and Malpractice Insurance

If any of the following professionals provide services in the execution of the Contract, Contractor shall purchase and maintain Professional Liability Insurance, which coverage shall have minimum limits of $1,000,000:

- Medical Professionals, such as physicians, nurses, dentists, and pharmacists;
- Architects and Engineers;
- Attorneys;
- Accountants and Professional Financial Advisors;
- Real Estate Brokers and Appraisers;
- Insurance Agents; and
- Consultants.

Claims-made coverage for Professional Liability Insurance is acceptable. The date of the inception of the policy must be no later than the first date of the anticipated work under this Contract. It shall provide coverage for the duration of this Contract and shall have an expiration date no earlier than 30 days after the anticipated completion of the Contract. The policy shall provide an extended reporting period of at least 24 months, with full reinstatement of limits, from the expiration date of the policy, if policy is not renewed.

B. Cyber Liability Insurance

For Contracts in which the Contractor shall be granted access to electronic data belonging to the University or others, including but not limited to corporate confidential information (CCI), personal financial information (PII), personal health information (PHI), payment card information (PCI), and all personal student information (PSI) stored in electronic format, and for which there is a risk of electronic security breaches of this confidential data, including inadvertent release, hacking, viruses, improper destruction, etc., Cyber liability insurance, including first-party costs, shall be required with a minimum limit per occurrence of $1,000,000. Claims-made coverage is acceptable. The date of the inception of the policy must be no later than the first date of the anticipated work under this Contract. It shall provide coverage for the duration of this Contract and shall have an expiration date no earlier than 30 days after the anticipated completion of the Contract. The policy shall provide an extended reporting period of not less than 36 months from the expiration date of the policy, if the policy is not renewed. The policy shall not be cancelled for any reason, except non-payment of premium.

IV. Reduced Limits for Special Circumstances

The scope of work for a bid or Contract may dictate that a reduction of insurance limits is necessary in order to facilitate competition and/or ensure the University's ability to hire qualified Contractors. Low risk activities which may justify a reduction in insurance limits include, but are not limited to:

- Services in which the owner/operator is the only Contractor employee;
- Services that do not involve the use of a motor vehicle;
- Services in which there is no use of hazardous or radioactive materials;
- Services in which there is no use of power machinery or tools;
- Services in which there is no use of high voltage equipment; and
- Services in which no work is actually performed on the University campus.

For these special circumstances, University's Director of Purchasing, at his/her discretion, may choose to reduce the insurance required of Contractor. If insurance requirements are so reduced, the reduction(s) must comply with the following guidelines:

A. Workers Compensation

University may waive workers' compensation insurance requirements for sole proprietors if they are the only person(s) employed by Contractor in performing the work or services specified in the Contract.

If coverage is so waived, the Contract must include language that Contractor agrees that such persons will have no cause of action against, and will not assert a claim against, University, the Board, and/or the State of Louisiana, whether pursuant to the workers' compensation law of Louisiana or any other state, or other similar state or federal law, under any circumstance. The Contract must also include language that the parties agree that University, the Board, and the State of Louisiana, and all of their agents and employees, shall in no circumstance be, or considered as, the employer or statutory employer of Contractor, its owners, agents, or employees. The Contract must further include language that the parties agree that Contractor is a wholly independent contractor and is exclusively responsible for its own employees, owners, and agents, and that Contractor agrees to protect, defend, indemnify and hold University, the Board, and the State of Louisiana, and all of their agents and employees, harmless from any assertion or claim that may arise from the performance of this Contract.

B. Commercial General Liability

Commercial General Liability insurance, including Personal and Advertising Injury Liability, may be reduced to a minimum limit per occurrence of $100,000. The Insurance Services Office (ISO) Commercial General Liability occurrence coverage form CG 00 01 (current form approved for use in Louisiana), or equivalent, is to be used in the policy. Claims-made form is unacceptable.

C. Automobile Liability

Automobile Liability Insurance requirements may be waived *only if* the scope of work does not involve the use of a motor vehicle. Examples include but are not limited to:

1. Goods and/or services that will be delivered to University by a third party (not Contractor); and
2. Goods and/or services that will be delivered to University electronically.

D. Required Insurance Language

Notwithstanding any reduction or waiver made pursuant to this section, all bid/contract specifications and all Contracts must include the language set forth in the General Insurance Requirements section, above, subject to modification only for the specific reduction or waiver made.

END OF SECTION

GENERAL REQUIREMENTS

The Contractor shall furnish and install all labor and material necessary to provide and install the complete portion of this contract, including all materials and equipment as shown on the plans. It is the intention of these specifications that all systems be furnished complete with whatever necessary items are required to produce a satisfactory installation in a working order. The Contractor shall be responsible for bringing to the attention of the Owner any shortcomings of the design, or thereby, shall be responsible in full to meet the conditions set forth, that being, the system is to be in a satisfactory working order.

All material shall be installed in accordance with the instructions of the manufacturers. The work shall be done in strict compliance with state and local ordinances governing this class of work. The prospective bidder shall visit the job site and become familiar with all existing conditions found at the site. The Contractor shall become acquainted with all existing factors and conditions which affect the work. Failure to do so shall not relieve meeting the responsibility to install the work correctly.

The Contractor shall protect the entire installation from injury on the Project until final acceptance. Failure to do so shall be sufficient cause for the Agent to reject any work.

CONSTRUCTION FORCE

The Contractor shall provide and maintain in full operation at all times during the performance of the contract a sufficient work crew to execute the work with dispatch. The Contractor shall provide a full time superintendent who shall be on the job during all working periods.

The Contractor shall be responsible for maintenance and repair of all equipment installed by him which fails due to substandard workmanship.

PARKING

Contractor shall be responsible for all fees for temporary campus parking permits. The Facility Management department shall request the permits through the UL Parking and Transit department. Contractor shall be required to display the permit on their vehicles at all times while on campus. Failure to do so may result in parking citation.

DEQ NOTIFICATION

The Contractor shall be responsible for the proper notification of the Department of Environmental Quality whenever demolition work is to be performed. Copies of the DEQ Notification Form AAC-2 and any additional correspondence with DEQ shall be copied to the University.

STANDARDS

All materials furnished under this contract shall be designed, constructed and rated in accordance with the latest applicable standards, and shall pass tests as recommended therein.

WORKMANSHIP AND MATERIALS

The workmanship shall conform to the best accepted construction practice. Should it become evident that during the course of construction that the items indicated on the plans, are for any reason undesirable, the Contractor shall immediately bring the situation to the attention of the Agent for a decision. The Contractor shall be responsible for installing the proper materials as described by the drawings and specifications.
All materials furnished for this Project shall be new, undamaged, and bear the label of the Underwriters' Laboratories, Inc. Deliver materials in manufacturer’s original package and store on skids so that the materials are off the ground, and so that product labels are exposed for easy inspection.

The Bidder shall base the proposal on materials herein specified. Reference to specific manufacturers or trade names is not intended to limit or indicate preference to specific manufacturers, but to indicate a standard of quality. Written approval from the Agent is required on all substitutions prior to installations.

GUARANTEE

The Contractor shall guarantee new materials and workmanship for a minimum of one (1) full year after formal acceptance of the Project. The Contractor will replace defective material and repair all workmanship defects promptly, and absorb all costs.

This provision shall not override any other warranties that are specified herein.

CAMPUS SAFETY POLICY

Contractor shall adhere to the campus safety policy. Information regarding campus safety can be found on the UL Lafayette website at: http://www.louisiana.edu/ehs

LOUISIANA ONE CALL

UL Lafayette is a member in the Louisiana One Call system. At least 72 hours before digging anywhere on UL Lafayette property the contractor **must** call 1-800-272-3020 to verify the location of utilities.

EXISTING LANDSCAPING

Contractor is liable for any damages caused to the existing landscaping. All landscaping must be protected from root compaction and other physical damage. Contractor **must** provide three foot high orange construction fencing around the drip line of all trees within the construction site.

ASBESTOS

The contractor **will not** be required to interface with any asbestos containing material (ACM) during this Project. The State of Louisiana has conducted an asbestos survey of all buildings on the UL Lafayette campus. The results of the survey are compiled in management plans for each building. The management plans were assembled according to the requirements set forth in the Department of Environmental Quality Required Elements Index. These plans are available for review to anyone interested in the results. The plans are kept on file in the Reserve Reading Room of Edith Garland Dupre' Library.

COORDINATION OF WORK

The Contractor shall inform the Agent each day of his work location before proceeding to work, and each time the Contractor moves into a different area.

STORM WATER RUN OFF PROTECTION

Contractor shall protect the entire construction site from erosion due to storm water run-off. A retention barrier shall be constructed around the entire construction site perimeter to prevent erosion from infiltrating the storm water drainage system.

PAYMENT

The Contractor may invoice the Owner for work performed on a monthly basis. The work performed shall meet the approval of UL Lafayette. UL Lafayette shall process payment after verification of the invoice.

On Projects where a performance bond is specified, the University will withhold ten percent (10%) retainage from all payments for completed work. The retainage will be released to the contractor according to the procedures set forth in the “INSTRUCTIONS TO BIDDERS AND GENERAL CONDITIONS”, section 10.

FINAL PAYMENT WILL NOT BE ISSUED UNTIL ALL UNIVERSITY KEYS HAVE BEEN RETURNED TO THE FACILITY MANAGEMENT OFFICE.

CLEAN-UP

The Contractor is responsible for the daily clean-up and disposal of all trash and construction debris relating to this Project. University dumpsters shall **not** be used for the disposal of debris. Should the Contractor dispose of any debris into University facilities, the cost of removal will be deducted from the University's final payment under this contract. Occupied areas (e.g.: Classrooms, Offices, Labs, etc.) shall be broom cleaned and vacuumed at the end of the work day to allow use of the room by the University. Debris and materials shall be removed from the rooms to allow use of the room by the University.

INDEMNIFICATION

The Contractor will indemnify and hold harmless the Owner and all of their agents and employees from and against all claims, damages, losses, and expenses including attorney's fees arising out of or resulting from operations under the Contract Documents by the Contractor, and subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, which are caused in whole or in part by any error, omission, or act of any of them. If any and all claims against the Owner or any of their agents or employees by any employee of the Contractor, subcontractor, anyone directly or indirectly employed by any of them, or anyone for whose acts any of them may be liable, the indemnification obligation of the Contractor under this article shall not be limited in any way by any limitation on the amount or type of damages, compensation or benefits payable by or for the Contractor or any subcontractor under Workmen's Compensation laws.

END OF SECTION

LOUISIANA UNIFORM PUBLIC WORK BID FORM

TO: University of Louisiana at Lafayette
Purchasing Office, Martin Hall Room 123
104 University Circle
PO Box 40197
Lafayette, LA 70504

BID FOR: HVAC AIR HANDLER REPLACEMENT
DUPRE LIBRARY
File No. 20223

The undersigned bidder hereby declares and represents that she/he: a) has carefully examined and understands the Bidding Documents, b) has not received, relied on, or based his bid on any verbal instructions contrary to the Bidding Documents or any addenda, c) has personally inspected and is familiar with the Project site, and hereby proposes to provide all labor, materials, tools, appliances and facilities as required to perform, in a workmanlike manner, all work and services for the construction and completion of the referenced Project, all in strict accordance with the Bidding Documents prepared by:

University of Louisiana at Lafayette and dated: May 2020 .
(Owner to provide name of entity preparing bidding documents.)

Bidder must acknowledge all addenda. The Bidder acknowledges receipt of the following ADDENDA: (Enter the number the Designer has assigned to each of the addenda that the Bidder is acknowledging) _____

TOTAL BASE BID: For all work required by the Bidding Documents (including any and all unit prices designated "Base Bid"* but not alternates) the sum of:

_____Dollars ($_____)

ALTERNATES: For any and all work required by the Bidding Documents for Alternates including any and all unit prices designated as alternates in the unit price description.

Alternate No. 1 ***ADD: Cleaning and coating of all supply ductwork and supply grilles as indicated on plans*** **for the lump sum of*:***
_____Dollars ($_____)

Alternate No. 2: ***ADD: Cleaning and coating of all return ductwork and return grilles as indicated on plans*** **for the lump sum of:**
_____Dollars ($_____)

Alternate No. 3 ***ADD: Additional Testing, Adjusting, and Balancing of Supply Grilles as indicated on plans*** **for the lump sum of:**
_____Dollars ($_____)

NAME OF BIDDER: _____

ADDRESS OF BIDDER: _____

_____

LOUISIANA CONTRACTOR'S LICENSE NUMBER: _____

NAME OF AUTHORIZED SIGNATORY OF BIDDER: _____

TITLE OF AUTHORIZED SIGNATORY OF BIDDER: _____

SIGNATURE OF AUTHORIZED SIGNATORY OF BIDDER: _____**

DATE: _____

***** The **Unit Price Form** shall be used if the contract includes unit prices. Otherwise, it is not required and need not be included with the form. The number of unit prices that may be included is not limited and additional sheets may be included if needed.

****** A **CORPORATE RESOLUTION OR WRITTEN EVIDENCE** of the authority of the person signing the bid for the public work as prescribed by LA R.S. 38:2212(B)(5).
BID SECURITY in the form of a bid bond, certified check or cashier's check as prescribed by LA RS 38:2218(A) attached to and made a part of this bid.

NOTE: Affidavit submitted with the Bid Documents, prior to the opening of bids, will not be accepted in accordance with LA. R.S. 38:2212.10.

_____	_____
Name of Project	**Project No.**

STATE OF _____

PARISH OF _____

ATTESTATIONS AFFIDAVIT

Before me, the undersigned notary public, duly commissioned and qualified in and for the parish and state aforesaid, personally came and appeared Affiant, who after being duly sworn, attested as follows:

LA. R.S. 38:2227 PAST CRIMINAL CONVICTIONS OF BIDDERS

A. No sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes:

(a) Public bribery (R.S. 14:118)
(b) Corrupt influencing (R.S. 14:120)
(c) Extortion (R.S. 14:66)
(d) Money laundering (R.S. 14:23)

B. Within the past five years from the Project bid date, no sole proprietor or individual partner, incorporator, director, manager, officer, organizer, or member who has a minimum of a ten percent (10%) ownership in the bidding entity named below has been convicted of, or has entered a plea of guilty or nolo contendere to any of the following state crimes or equivalent federal crimes, during the solicitation or execution of a contract or bid awarded pursuant to the provisions of Chapter 10 of Title 38 of the Louisiana Revised Statutes:

(a) Theft (R.S. 14:67)
(b) Identity Theft (R.S. 14:67.16)
(c) Theft of a business record (R.S.14:67.20)
(d) False accounting (R.S. 14:70)
(e) Issuing worthless checks (R.S. 14:71)
(f) Bank fraud (R.S. 14:71.1)
(g) Forgery (R.S. 14:72)
(h) Contractors; misapplication of payments (R.S. 14:202)
(i) Malfeasance in office (R.S. 14:134)

LA. R.S. 38:2212.10 Verification of Employees

A. At the time of bidding, Appearer is registered and participates in a status verification system to verify that all new hires in the state of Louisiana are legal citizens of the United States or are legal aliens.

B. If awarded the contract, Appearer shall continue, during the term of the contract, to utilize a status verification system to verify the legal status of all new employees in the state of Louisiana.

C. If awarded the contract, Appearer shall require all subcontractors to submit to it a sworn affidavit verifying compliance with Paragraphs (A) and (B) of this Subsection.

_____ _____

Name of Project **Project No.**

LA. R.S. 23:1726(B) Certification Regarding Unpaid Workers Compensation Insurance

A. R.S. 23:1726 prohibits any entity against whom an assessment under Part X of Chapter 11 of Title 23 of the Louisiana Revised Statutes of 1950 (Alternative Collection Procedures & Assessments) is in effect, and whose right to appeal that assessment is exhausted, from submitting a bid or proposal for or obtaining any contract pursuant to Chapter 10 of Title 38 of the Louisiana Revised Statutes of 1950 and Chapters 16 and 17 of Title 39 of the Louisiana Revised Statutes of 1950.

B. By signing this bid /proposal, Affiant certifies that no such assessment is in effect against the bidding / proposing entity.

_____ _____

NAME OF BIDDER **NAME OF AUTHORIZED SIGNATORY OF BIDDER**

_____ _____

DATE **TITLE OF AUTHORIZED SIGNATORY OF BIDDER**

_____

SIGNATURE OF AUTHORIZED
SIGNATORY OF BIDDER/AFFIANT

Sworn to and subscribed before me by Affiant on the _____ day of _____ , 20___ .

_____

Notary Public

STATE OF _____

[ ] PARISH OF _____ [ ] COUNTY OF _____

AFFIDAVIT ATTESTING THAT PUBLIC CONTRACT WAS NOT, NOR WILL NOT BE SECURED THROUGH EMPLOYMENT OR PAYMENT OF SOLICITOR

KNOW ALL MEN BY THESE PRESENCE, that a public contract is contemplated between

University of Louisiana at Lafayette and
_____,

represented by (print or type) _____ attests that s/he
is empowered and authorized to execute said documents.

FURTHER, (signature) _____, who being duly sworn, does depose and attest that:

1) **Affiant employed no person, corporation, firm, association, or other organization, either directly or indirectly, to secure the public contract under which he received payment, other than persons regularly employed by the affiant whose services in connection with the construction, alteration or demolition of the public building or Project or in securing the public contract wherein the regular course of their duties for affiant; and**

2) **That no part of the contract price received by affiant was paid or will be paid to any person, Corporation, firm, association, or other organization for soliciting the contract, other than the payment of their normal compensation to persons regularly employed by the affiant whose services in connection with the construction, alteration or demolition of the public building or Project were in the regular course of their duties for affiant.**

BEFORE ME, the representing authority, personally appeared, who being duly sworn, deposes and states that the above is true and correct in all respects recited.

SWORN TO AND SUBSCRIBED before me, this _____ day of _____, 20_____.

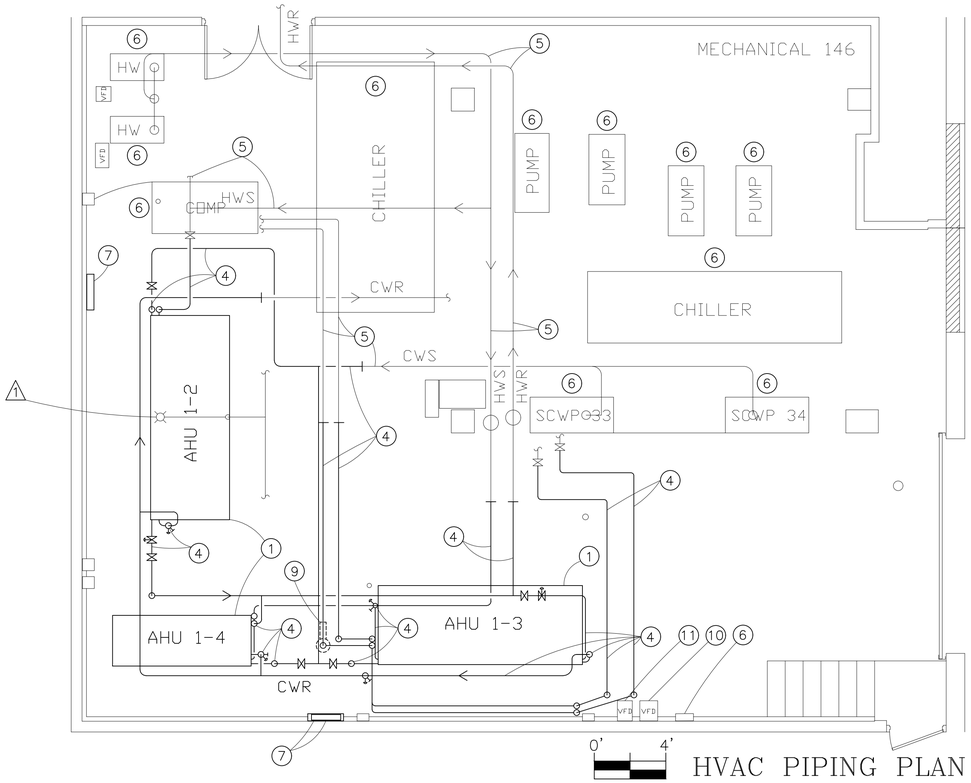
_____
Notary Public

UL

UNIVERSITY OF LOUISIANA
AT LAFAYETTE

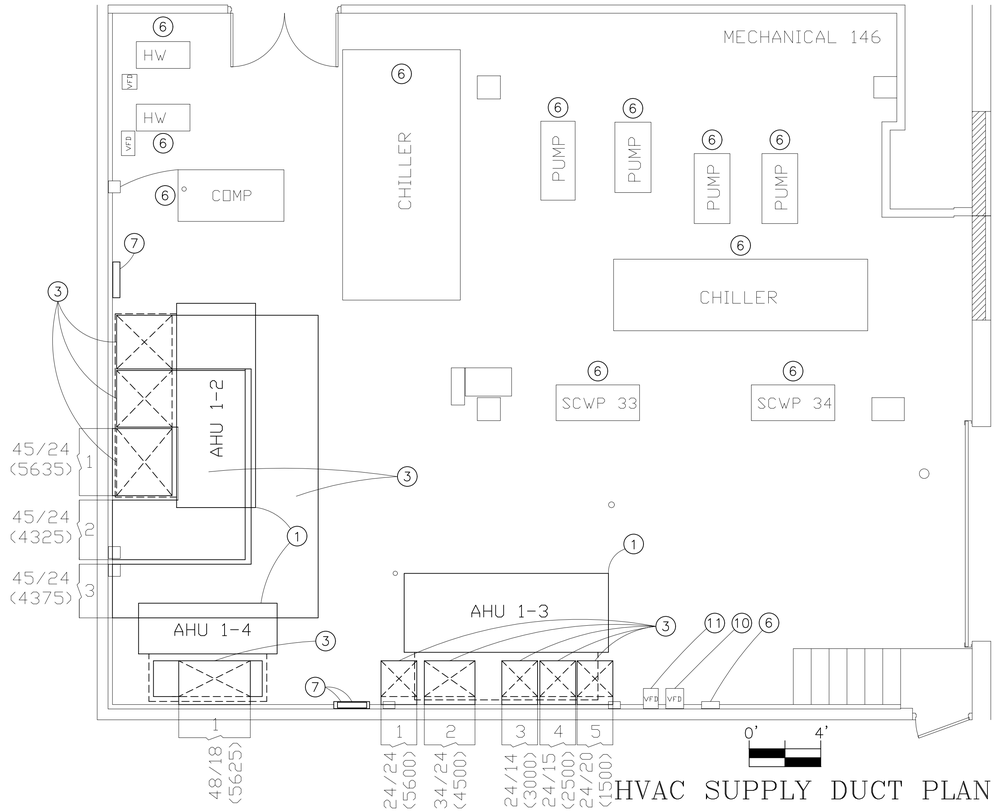
DUPRE LIBRARY
ROOM 146
AIR HANDLING UNIT
REPLACEMENT

APRIL 2020



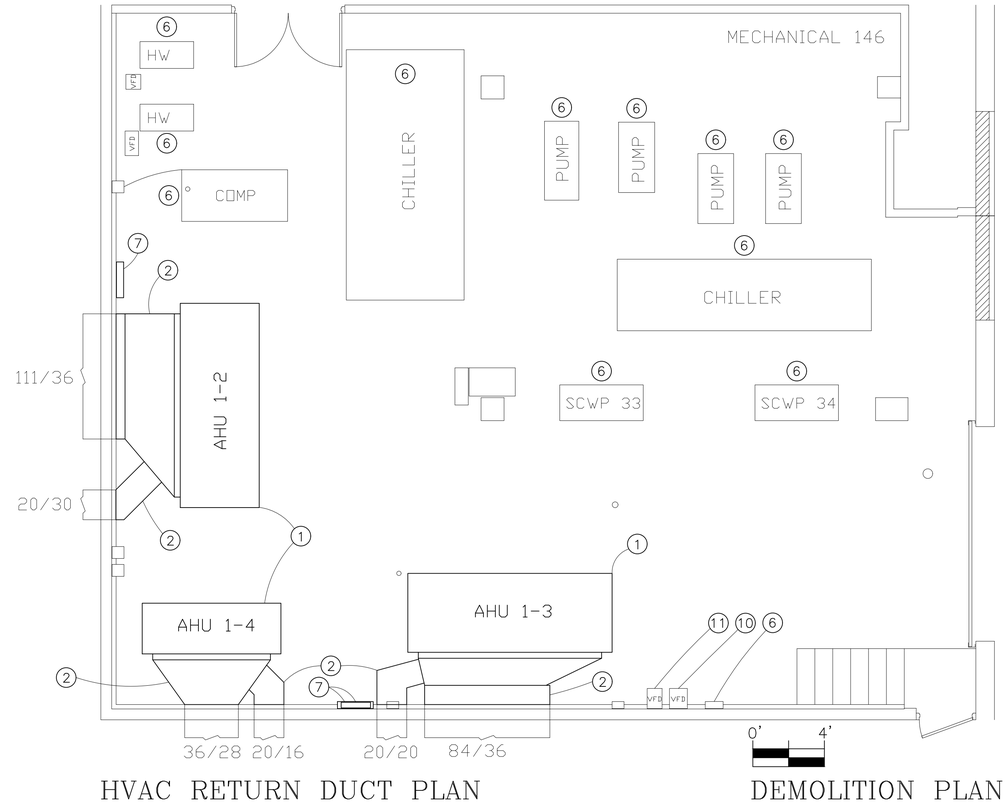
0' 4'

HVAC PIPING PLAN



0' 4'

HVAC SUPPLY DUCT PLAN



0' 4'

HVAC RETURN DUCT PLAN

0' 4'

DEMOLITION PLAN

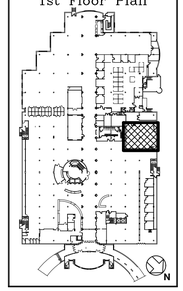
MECHANICAL DEMOLITION NOTES:

(1) –REMOVE AIR HANDLING UNIT (AHU).
(2) –REMOVE EXISTING CONNECTING RETURN AIR DUCT BETWEEN AHU AND WALL (TYPICAL).
(3) –REMOVE EXISTING CONNECTING SUPPLY AIR DUCT BETWEEN AHU AND WALL (TYPICAL).
(4) –REMOVE EXISTING CHILLED AND HOT WATER PIPING (TYPICAL).
(5) –EXISTING HVAC PIPING TO REMAIN (TYPICAL).
(6) –EXISTING EQUIPMENT TO REMAIN (TYPICAL)
(7) –EXISTING EMS CONTROL PANEL(S) TO BE REMOVED AND REPLACED.
(8) –EXISTING PNEUMATIC CONTROL TUBING ASSOCIATED WITH EXISTING AHU's TO BE REMOVED AND CAPPED AT MAIN.
(9) –EXISTING IN–LINE PUMP FOR ARCHIVES AHU's SHALL BE RELOCATED.
(10) –EXISTING VFD FOR CW SECONDARY PUMPS TO BE REMOVED.
(11) –EXISTING VFD FOR CW SECONDARY PUMPS TO BE RELOCATED.

SPRINKLER DEMOLITION NOTES:

(1) –ADJUST EXISTING SPRINKLER HEAD AND ASSOCIATED BRANCH PIPING BELOW EXISTING DUCTWORK AS REQUIRED TO COMPLETE ALL HVAC MODIFICATIONS.

KEY
1st Floor Plan



GENERAL NOTES

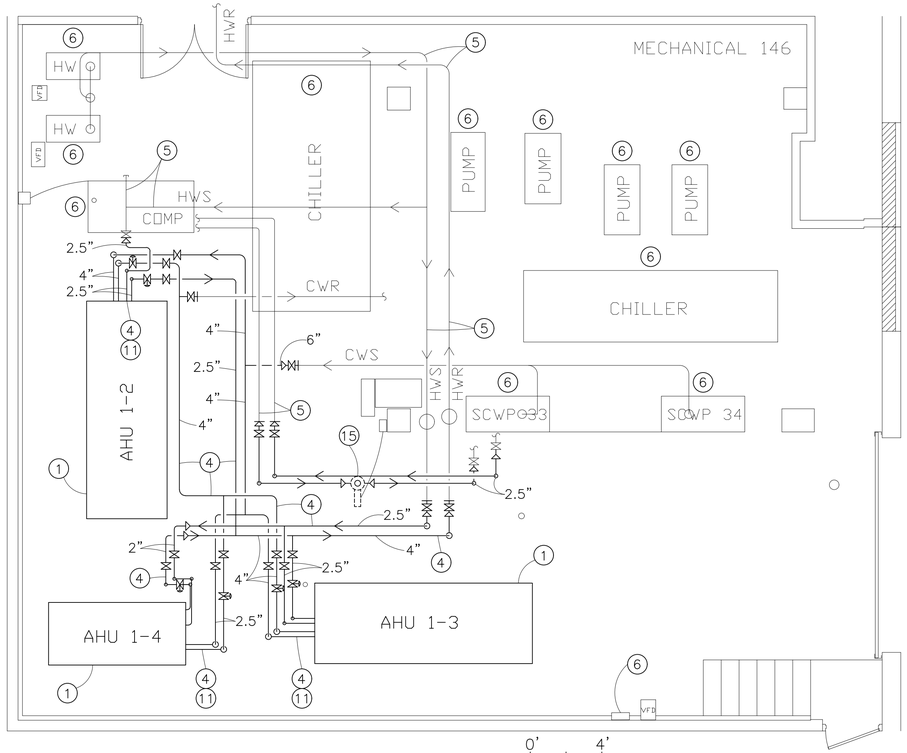
NO:	REVISIONS:	DATE:

DUPRE LIBRARY - ROOM 146
AIR HANDLING UNIT REPLACEMENT

UL, PHYSICAL PLANT
THE UNIVERSITY OF LOUISIANA AT LAFAYETTE
P.O. BOX 43210
LAFAYETTE, LOUISIANA 70504

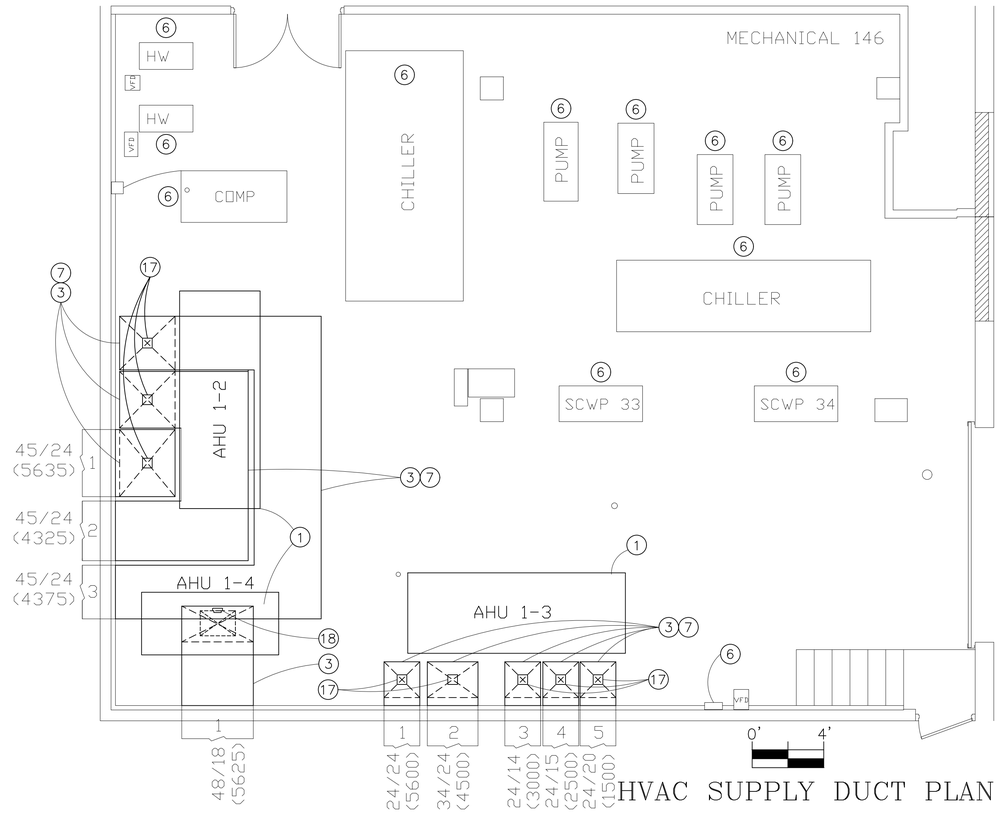
UL
UNIVERSITY OF LOUISIANA AT LAFAYETTE
PHYSICAL PLANT
FILE:
04857(DUPRE LIBRARY)(MAPS)

PROJECT NO:
DATE: APRIL–2020
SCALE:
SHEET: M1



0' 4'

HVAC PIPING PLAN



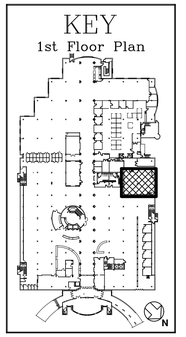
0' 4'

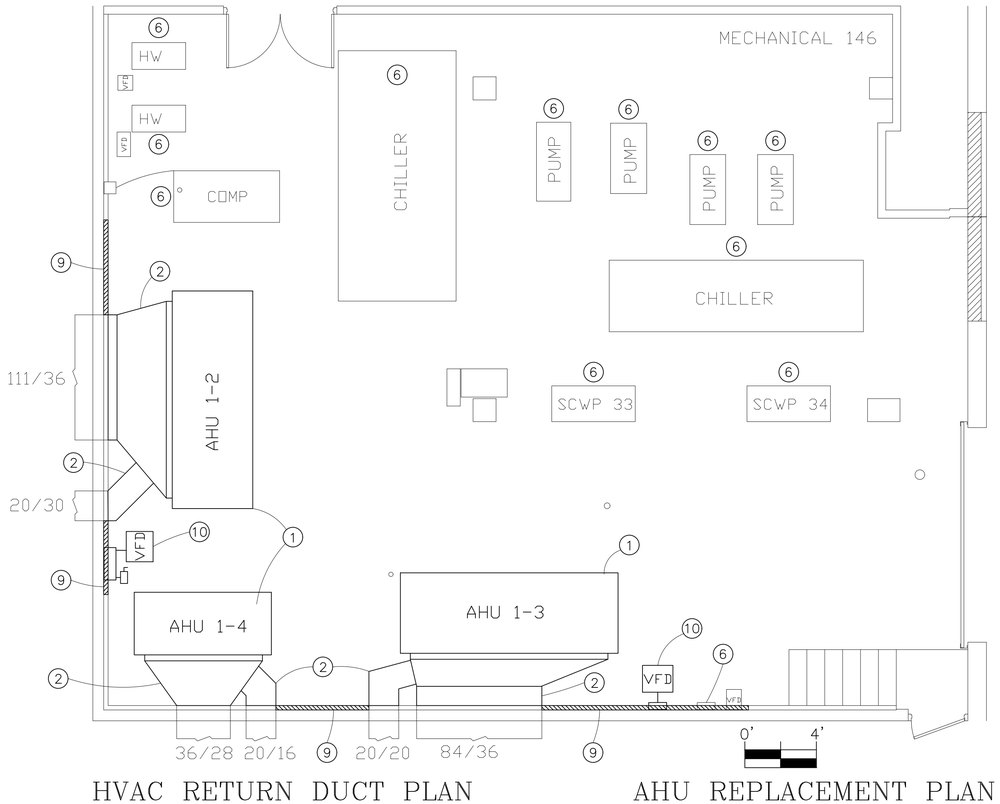
HVAC SUPPLY DUCT PLAN

MECHANICAL NOTES:

1. –NEW AHU INSTALLED ON 6" HIGH WIDE FLANGE GAL. I–BEAMS WITH 1" THICK VIBRATION ISOLATION PADS.
2. –INSTALL NEW INTERNALLY LINED RETURN DUCT BETWEEN NEW AHU AND EXISTING RETURN DUCT.
3. –INSTALL NEW INTERNALLY LINED SUPPLY DUCT BETWEEN NEW AHU AND EXISTING SUPPLY DUCT.
4. –INSTALL NEW CHILLED AND HOT WATER PIPING TO RE–CONNECT TO NEW AHU. APPLY 2 COATS OF RUST INHIBITOR PRIMER PRIOR TO INSULATION.
5. –EXISTING HVAC PIPING TO REMAIN (TYPICAL).
6. –EXISTING EQUIPMENT TO REMAIN (TYPICAL).
7. –EACH AHU ZONE DUCT SHALL HAVE A NEW MANUAL DAMPER INSTALLED TO ADJUST AIR FLOW.
8. –MANUAL DAMPERS AND FLEX CONNECTIONS SHALL BE EXTERNALLY WRAPPED WITH INSULATION.
9. –WALL INSULATION SHALL BE REPAIRED WHERE DEVICES ARE REMOVED. INSULATION AND COVERING SHALL MATCH EXISTING INSULATION SYSTEM.
10. –NEW VFD FOR AHU 1–2 & 1–3 (ONE VFD FOR 3 PLENUM FAN MOTORS IN AHU).
11. –ALL PIPING TO AHU's SHALL BE PROPERLY POSITIONED TO ALLOW PROPER ACCESS TO MOTORS, FILTERS, ETC.
12. –CONTRACTOR SHALL VERIFY EXISTING PIPE SIZES PRIOR TO ORDERING MATERIAL. EXISTING PIPING MAY NOT BE SIZES INDICATED ON EXISTING PLANS.
13. –CONTROLS CONTRACTOR SHALL VERIFY LOCATION OF NEW CONTROL PANEL FOR EACH AHU. COORDINATE WITH ELECTRICAL CONTRACTOR, NEW PIPING, DISCONNECTS, VFD'S, ETC.
14. –CONTROLS CONTRACTOR SHALL VERIFY LOCATION OF NEW DATA DROPS FOR NEW AHU CONTROL PANEL(S) (ONE PER AHU). DATA DROPS SHALL BE INSTALLED BY OWNER.
15. –NEW LOCATION OF CW IN–LINE PUMP FOR ARCHIVES. RE–ROUTE PINING AS INDICATED.
16. –IT IS INTENDED THAT THE LIBRARY BUILDING SHALL BE SHUT DOWN TO DRAIN DOWN THE CW & HW PIPING. THE SHUT DOWN SHALL BE SCHEDULED WITH THE OWNER. CONTRACTOR SHALL CUT PIPING AND INSTALL NEW ISOLATION VALVES. THE CW & HW PIPING SYSTEMS SHALL BE REFILLED TO ALLOW THE BUILDING TO REMAIN OPERATIONAL WHILE THE NEW AHU'S ARE INSTALLED. ALL AHU'S, VFD'S, PIPING MATERIALS, ETC. SHALL BE ON SITE IN ORDER TO MINIMIZE DOWN TIME FOR AHU'S THAT ARE BEING REPLACED. ALL TRADES ARE EXPECTED TO COOPERATE IN ORDER TO MINIMIZE OUTAGE FOR AREAS SERVED BY THE 3 AHU'S THAT ARE BEING REPLACED. CONTRACTOR SHALL VERIFY LINE SIZES FOR EXISTING CW & HW PIPING PRIOR TO ORDERING MATERIALS IN ORDER TO HAVE PROPER FITTINGS NECESSARY TO COMPLETE THE RECONNECTION TO EXISTING PIPING.
17. –INSTALL DUCT MOUNTED IONIZATION DEVICE ON BOTTOM SIDE OF MULIT–ZONE BRANCH SUPPLY DUCT (PLAZMA AIR MODEL 7402, 120/1/60 ELECTRIC SERVICE, WITH PLUG IN WALL PACK).
18. –INSTALL DUCT MOUNTED IONIZATION DEVICE ON SIDE OF SINGLE ZONE MAIN SUPPLY DUCT (PLAZMA AIR MODEL 7402, 120/1/60 ELECTRIC SERVICE, WITH PLUG IN WALL PACK).

KEY
1st Floor Plan





HVAC RETURN DUCT PLAN

0' 4'

AHU REPLACEMENT PLAN

GENERAL NOTES

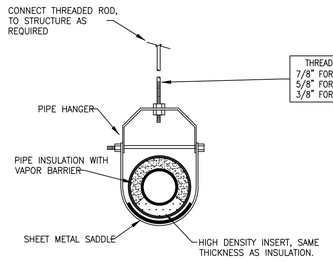
NO:	REVISIONS:	DATE:

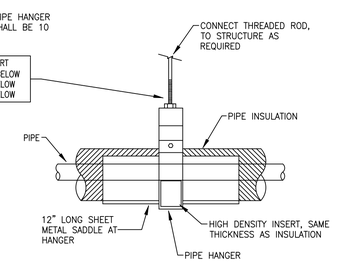
DUPRE LIBRARY - ROOM 146
AIR HANDLING UNIT REPLACEMENT

UL PHYSICAL PLANT
THE UNIVERSITY OF LOUISIANA AT LAFAYETTE
P.O. BOX 43210
LAFAYETTE, LOUISIANA 70504

UL
UNIVERSITY OF LOUISIANA AT LAFAYETTE
PHYSICAL PLANT
FILE:
04857(DUPRE LIBRARY)(MAPS)

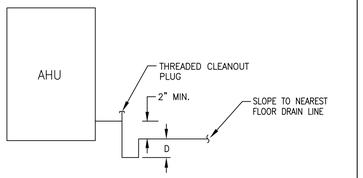
PROJECT NO:	SHEET:
DATE: APRIL–2020	M2
SCALE:	





1 INSULATED PIPE HANGER DETAIL

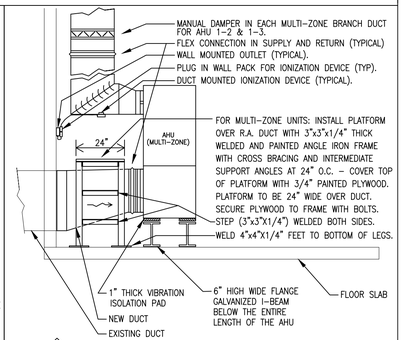
NO SCALE



NOTE:
D = TRAP DEPTH (AHU TOTAL STATIC PRESSURE PER MANUFACTURER)

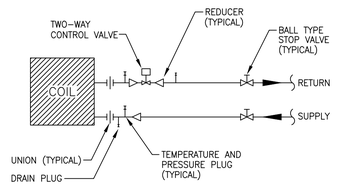
2 AHU CONDENSATE P-TRAP DETAIL

NO SCALE



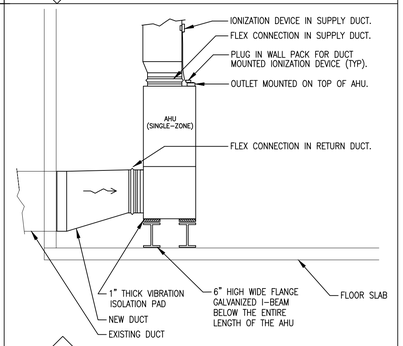
3 AHU DETAIL (MULTI-ZONE)

AHU 1-2 & AHU 1-3 NO SCALE



4 TWO-WAY COIL PIPING DIAGRAM

COOLING & HEATING COILS NO SCALE



5 AHU DETAIL (SINGLE ZONE)

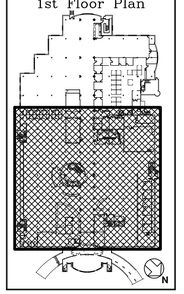
AHU 1-4 NO SCALE

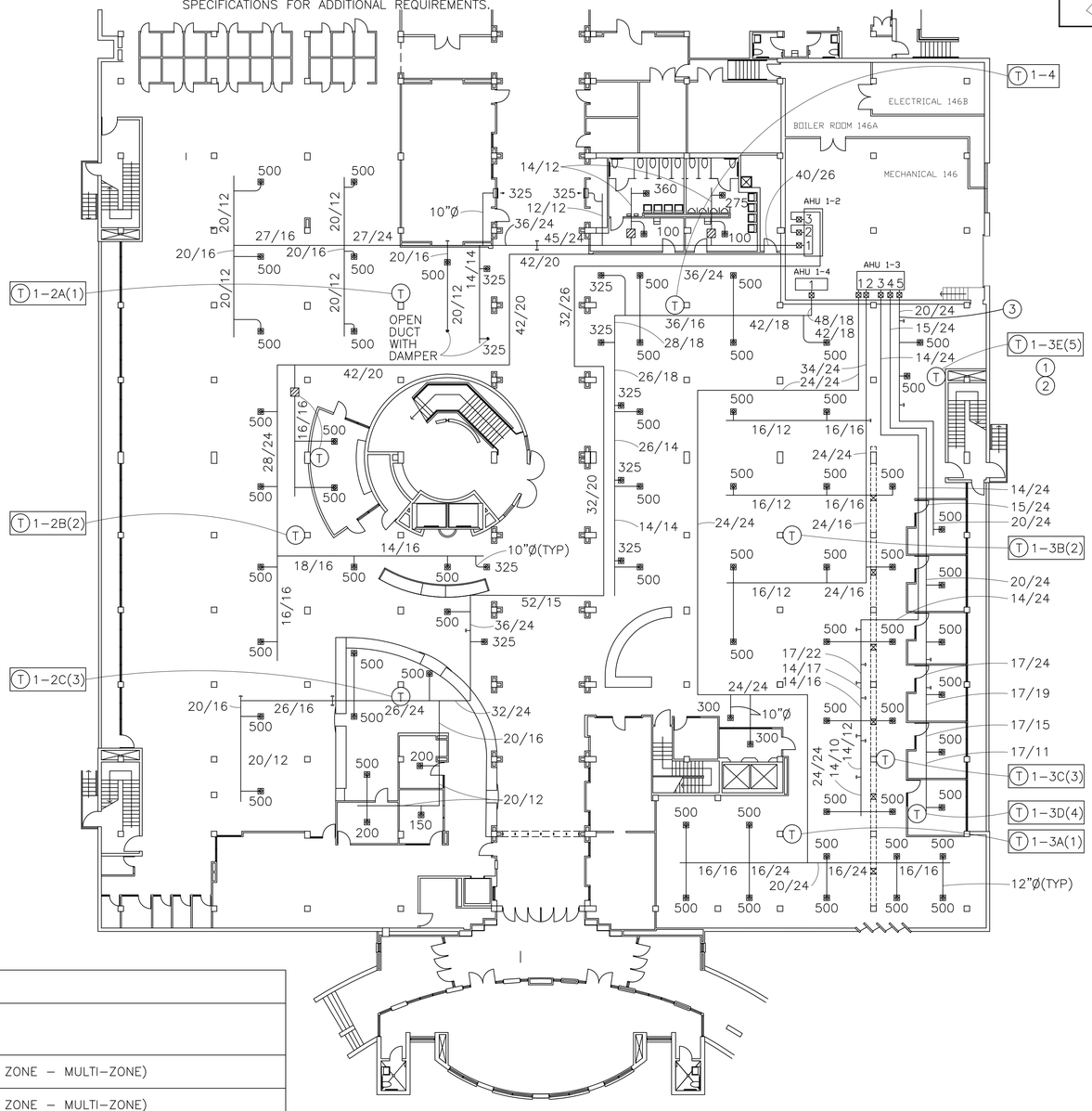
MECHANICAL NOTES:

1. -BASE BID: LOCATION OF THERMOSTAT (SPACE SENSOR) TO BE REPLACED (TYPICAL).
2. -BASE BID: (T) 1-3A(1) SPACE SENSOR FOR AHU 1-3, ZONE "A" OR 1.
3. -BASE BID: EXISTING ZONE BRANCH DUCTWORK WITH CFM PER SUPPLY GRILLE (TYPICAL).
4. -BASE BID: TAB CONTRACTOR SHALL PROVIDE AIR FLOW READINGS FOR EACH AHU ZONE PRIOR TO ANY DEMOLITION WORK.
5. -BASE BID: TAB CONTRACTOR SHALL MAKE INITIAL AIR FLOW ADJUSTMENT ON NEW AHU ZONES AS INDICATED IN CHART ON THIS SHEET.
6. -ALTERNATE NO. 1: CONTRACTOR SHALL CLEAN EXISTING SUPPLY DUCTWORK AND GRILLES PER SPECIFICATIONS.
7. -ALTERNATE NO. 3: ALL SUPPLY GRILLES SHOWN SHALL BE INITIALLY ADJUSTED TO AS INDICATED ON PLANS.
8. -ALTERNATE NO. 3: TAB CONTRACTOR SHALL MAKE FINAL AIR FLOW ADJUSTMENTS AS DIRECTED BY OWNER TO MEET OCCUPANCY REQUIREMENTS AFTER INITIAL ADJUSTMENTS HAVE BEEN COMPLETED. REFER TO SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

AHU	ZONE	RENOVATION PLAN CFM
1-2	A (1)	5,635
	B (2)	4,325
	C (3)	4,375
		14,335
1-3	A (1)	5,600
	B (2)	4,500
	C (3)	3,000
	D (4)	2,500
	E (5)	1,500
		17,100
1-4	A (1)	5,625

KEY
1st Floor Plan





AIR HANDLING UNIT SCHEDULE

AHU No.	CFM	T.S.P.	FAN HP	AMPS	ELECTRIC SERVICE	COOLING SENSIBLE (BTUH)	COOLING TOTAL (BTUH)	COOLING E.A.T. D.B.	COOLING E.A.T. W.B.	COOLING CW GPM	HEATING OUTPUT (BTUH)	HEATING E.A.T.	HEATING L.A.T.	HEATING HW GPM	COMMENTS
1-2	20,000	3.0"	3@ 6.5	3@ 8	460/3/60	408,700	574,500	77.8	65.3	144	476,500	67.3	85.6	48	TEMTROL (3 ZONE - MULTI-ZONE)
1-3	18,000	3.0"	3@ 5.5	3@ 7	460/3/60	333,000	434,500	77.2	65.0	119	380,000	69.0	89.0	38	TEMTROL (5 ZONE - MULTI-ZONE)
1-4	7,000	3.0"	7.5	9.5	460/3/60	158,200	219,800	78.3	66.1	55	205,000	66.3	94.3	21	TEMTROL (SINGLE ZONE)

NOTES: 1 - AHU 1-2 & 1-3 SHALL HAVE 3 SUPPLY PLENUM FANS, SINGLE POINT POWER CONNECTION, & OVERLOAD MOTOR PROTECTION IN PANEL BY AHU MANUFACTURER.
2 - AHU 1-4 SHALL HAVE HEATING COIL LOCATED IN THE RE-HEAT POSITION.

0' 8' 16'

SUPPLY DUCTWORK
PARTIAL FIRST FLOOR HVAC PLAN

GENERAL NOTES

NO:	REVISIONS:	DATE:

DUPRE LIBRARY - ROOM 146
AIR HANDLING UNIT REPLACEMENT

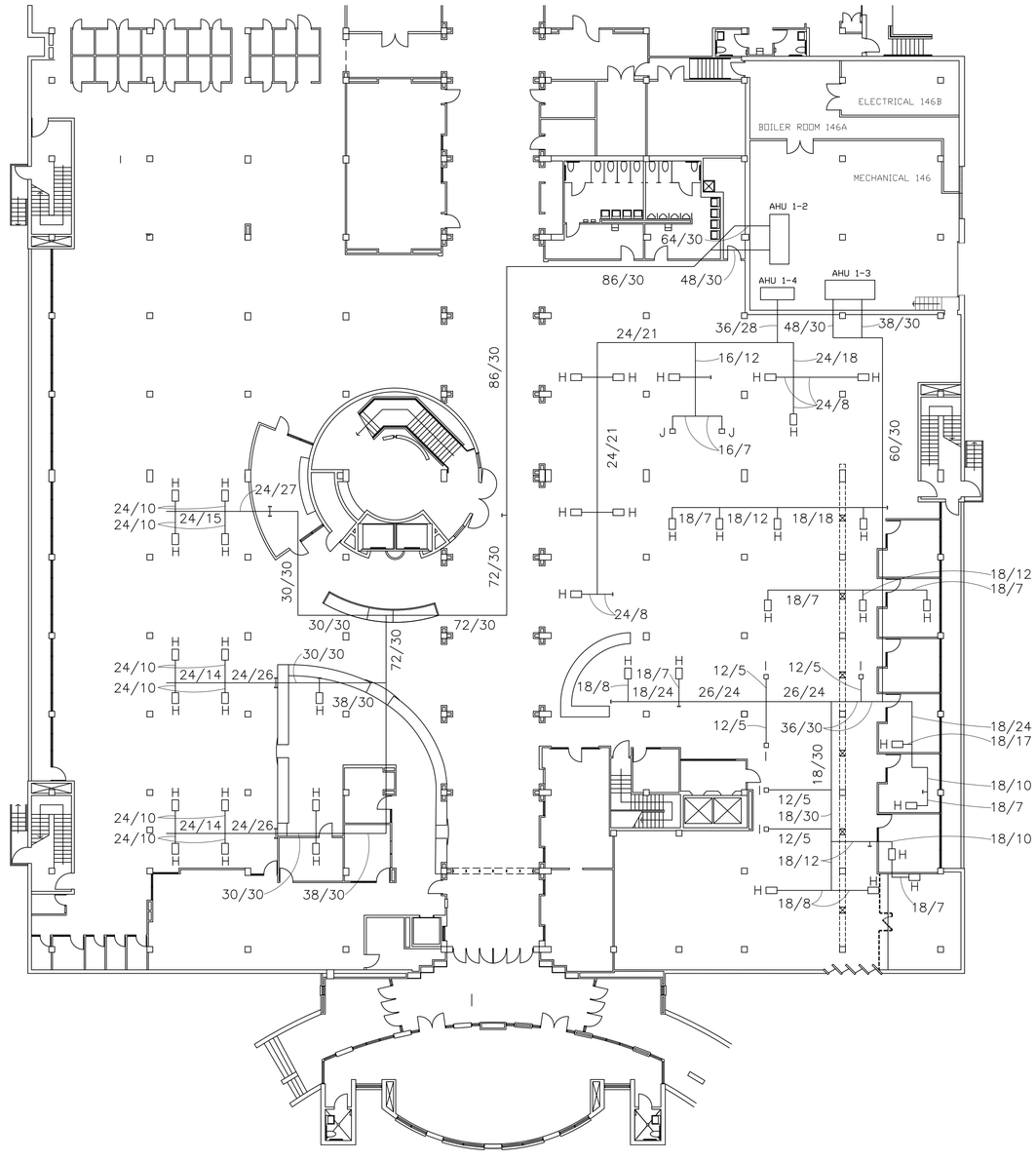
UL PHYSICAL PLANT
THE UNIVERSITY OF LOUISIANA AT LAFAYETTE
P.O. BOX 43210 LAFAYETTE, LOUISIANA 70504

UL
UNIVERSITY OF LOUISIANA AT LAFAYETTE
PHYSICAL PLANT
FILE:
04857(DUPRE LIBRARY)(MAPS)

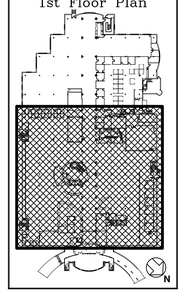
PROJECT NO:
DATE: APRIL-2020
SCALE: NO SCALE
SHEET: M3

MECHANICAL NOTES:

(1) –ALTERNATE NO. 2: CONTRACTOR SHALL CLEAN EXISTING RETURN AIR DUCTWORK AND GRILLES PER SPECIFICATIONS.
EXISTING GRILLE "H" – 30" X 18"
EXISTING GRILLE "I" – 12" X 12"
EXISTING GRILLE "J" – 12" X 15"



KEY
1st Floor Plan



RETURN DUCTWORK
PARTIAL FIRST FLOOR HVAC PLAN

0' 8' 16'

GENERAL NOTES

NO:	REVISIONS:	DATE:

DUPRE LIBRARY - ROOM 146
AIR HANDLING UNIT REPLACEMENT

UL PHYSICAL PLANT
THE UNIVERSITY OF LOUISIANA AT LAFAYETTE
P.O. BOX 43210
LAFAYETTE, LOUISIANA 70504

UL
UNIVERSITY OF LOUISIANA AT LAFAYETTE
PHYSICAL PLANT
FILE:
04857(DUPRE LIBRARY)(MAPS)

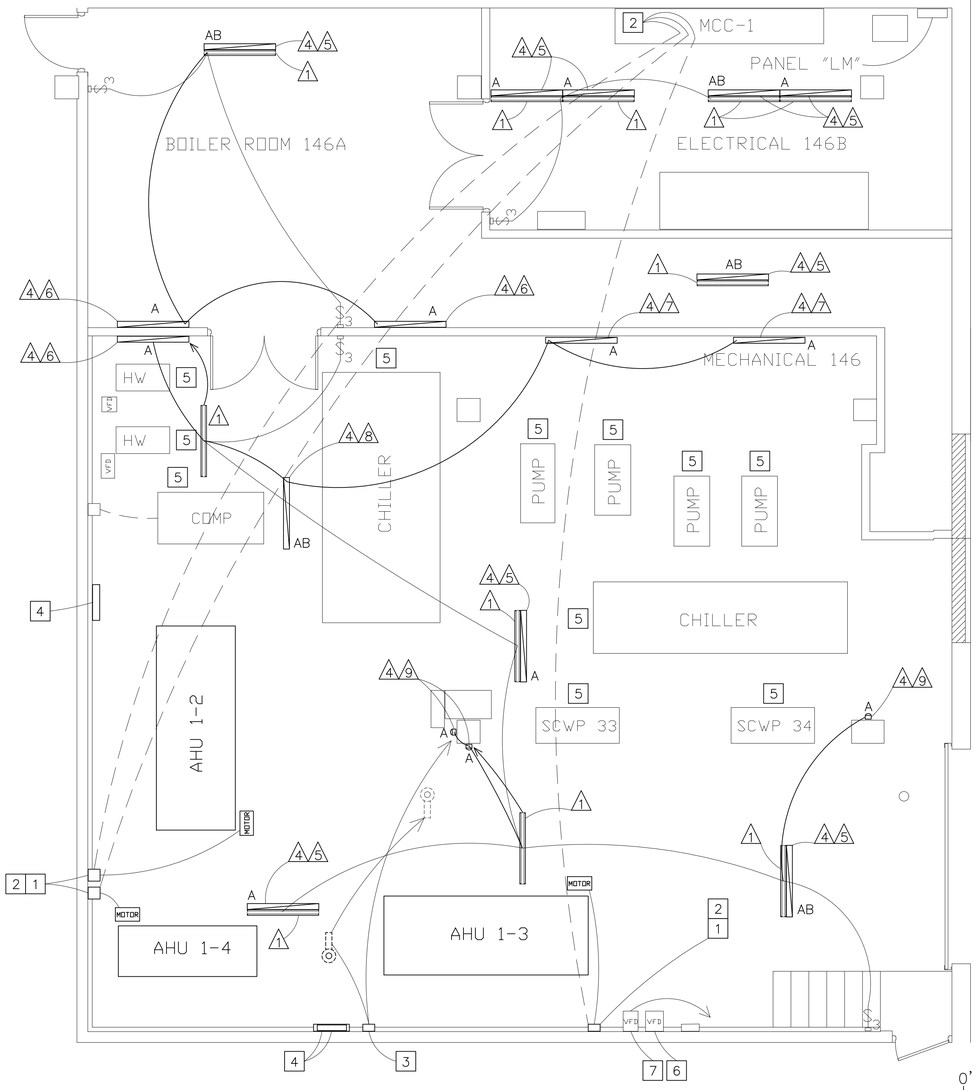
PROJECT NO:
DATE: APRIL-2020
SCALE: NO SCALE
SHEET: M4

ELECTRICAL DEMOLITION NOTES:

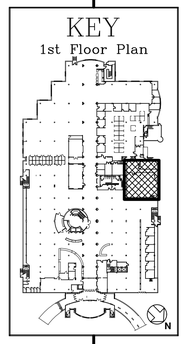
1 –REMOVE ALL POWER WIRING, CONDUIT, DISCONNECT, ETC. REQUIRED TO REMOVE EXISTING AHU.
2 –EXISTING STARTER FOR EXISTING AHU IS LOCATED IN ADJACENT ELECTRICAL ROOM 146B.
3 –REMOVE ALL POWER WIRING, CONDUIT, DISCONNECT, ETC. REQUIRED TO RELOCATE EXISTING IN–LINE PUMP.
4 –REMOVE ALL POWER WIRING, CONDUIT, ETC. REQUIRED TO REMOVE EXISTING CONTROL PANEL(S).
5 –EXISTING EQUIPMENT TO REMAIN (TYPICAL).
6 –EXISTING SECONDARY CHILLED WATER PUMP VFD TO BE REMOVED.
7 –EXISTING SECONDARY CHILLED WATER PUMP VFD TO BE RELOCATED.

ELECTRICAL LIGHTING NOTES:

1 –REMOVE EXISTING 4' LONG 2–BULB FLUORESCENT LIGHT FIXTURE SUSPENDED FROM HANGER CHAIN.
2 –NEW LIGHT FIXTURE "A" – LITHONIA ZL1N, L48 (4' LONG), 5000LM, FST (FROST DIFFUSER), MVOLT (277/1/60), 4000K, WHITE.
3 –NEW LIGHT FIXTURE "AB" – LITHONIA ZL1N, L48 (4' LONG), 5000LM, FST (FROST DIFFUSER), MVOLT (277/1/60), 4000K, WHITE, E10WLCP (BATTERY PACK).
4 –POWER WIRING FOR NEW LIGHT FIXTURES SHALL BE EXTENDED TO NEAREST EXISTING LIGHTING CIRCUIT.
5 –MOUNT NEW LIGHT FIXTURE SIMILAR TO EXISTING FIXTURE.
6 –NEW LIGHT FIXTURE TO BE MOUNTED ON WALL. MOUNT 9' A.F.F. (V.O.J. WITH OWNER).
7 –NEW LIGHT FIXTURE TO BE MOUNTED ON WALL. MOUNT 10' A.F.F. (V.O.J. WITH OWNER).
8 –NEW LIGHT FIXTURE TO BE MOUNTED WITH HANGER CHAIN FROM PIPE SUPPORT ABOVE. MOUNT 10' A.F.F. (V.O.J. WITH OWNER).
9 –NEW LIGHT FIXTURE TO BE MOUNTED VERTICAL ON COLUMN. MOUNT 8' A.F.F. (V.O.J. WITH OWNER).

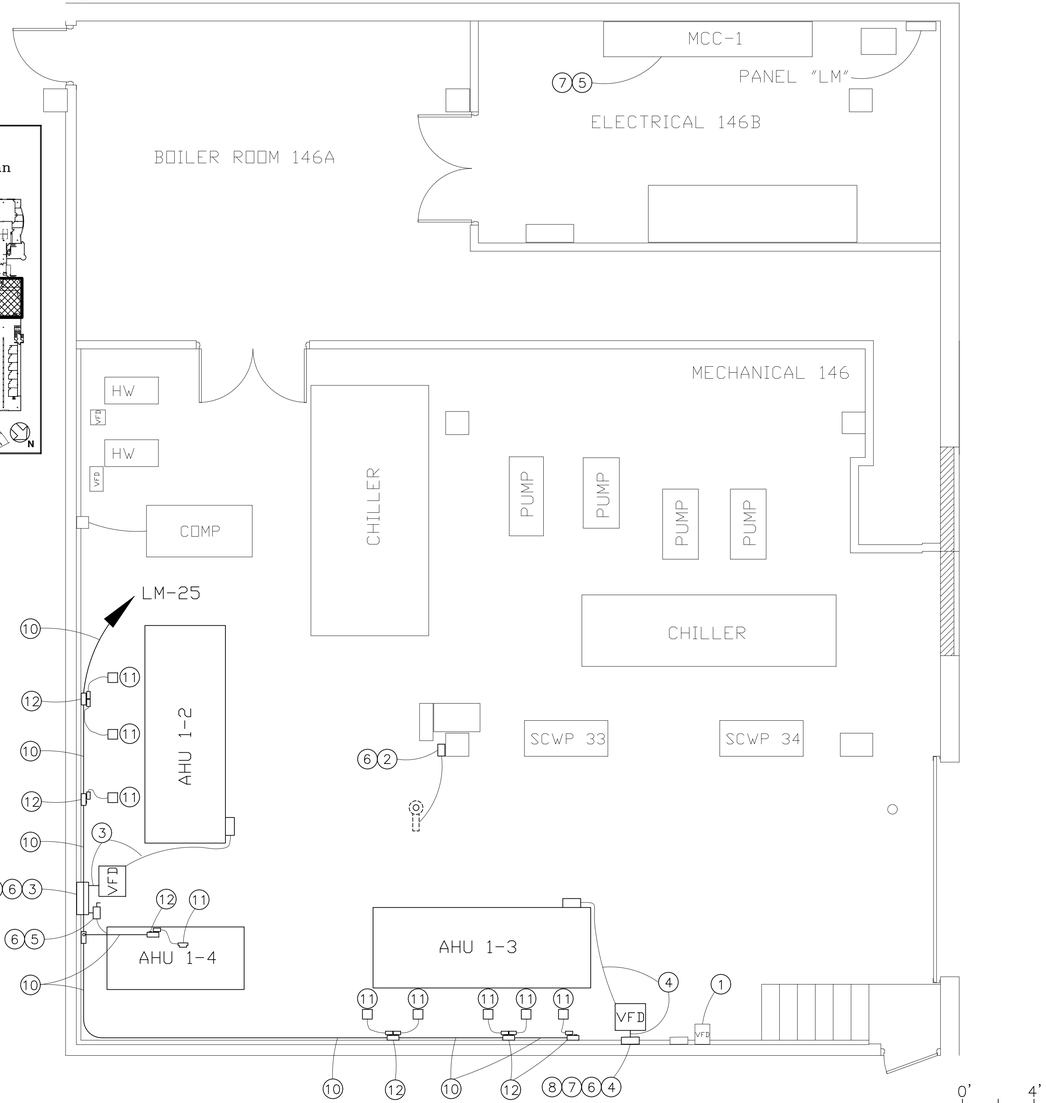


ELECTRICAL DEMOLITION & LIGHTING PLAN 0' 4'



ELECTRICAL NOTES:

1 –NEW LOCATION FOR CW SECONDARY PUMP VFD. RE–WIRE TO TRANSFER SWITCH, ETC. WIRING TO MATCH EXISTING.
2 –NEW LOCATION FOR ARCHIVES IN–LINE CW PUMP (5HP, 480/3/60) AND DISCONNECT. WIRING TO BE 3–#10 WITH 1–#10 GROUND IN 3/4"C.
3 –INSTALL NEW WIRE TROUGH. WIRING TO AHU 1–2 VFD AND AHU TO BE 3–#8 WITH 1–#8 GROUND IN 3/4" CONDUIT.
4 –INSTALL NEW WIRE TROUGH. WIRING TO AHU 1–3 VFD AND AHU TO BE 3–#10 WITH 1–#10 GROUND IN 3/4" CONDUIT.
5 –REPLACE STARTER OVERLOADS FOR NEW 7.5HP FAN MOTOR (AHU BEING REPLACED HAD A 5HP MOTOR). PROVIDE A NEW DISCONNECT WITH PROPERLY SIZED FUSES FOR NEW 7.5HP FAN MOTOR. WIRING TO NEW FAN MOTOR SHALL BE 3–#10 WITH 1–#10 GROUND IN 3/4"C.
6 –INSTALL GREENFIELD FLEXIBLE LIQUID TIGHT CONNECTIONS AT ALL NEW AHU's AND RE–LOCATED INLINE PUMP.
7 –BYPASS WIRING IN EXISTING STARTER(S) FOR AHU 1–2 & 1–3. RETAIN BREAKERS TO BE USED AS A MEANS OF DISCONNECT.
8 INSTALL NEW VFD's FOR AHU 1–2 & 1–3 (FURNISHED BY MECHANICAL CONTRACTOR, INSTALLED BY ELECTRICAL CONTRACTOR). EACH NEW VFD WILL SERVE THE RESPECTIVE AHU WITH 3 MOTORS (TOTAL OF 3 PLENUM FANS PER AHU). VFD's SHALL BE MOUNTED ON A FREE STANDING 1.5" GALVANIZED UNI–STRUT RACK WITH PRE–FORMED BRACKETS AND SPRING–NUTS. WIRING SHALL CONNECT FROM VFD TO PANEL ON AHU WITH OVERLOAD MOTOR PROTECTION IN PANEL. PANEL PROVIDED BY AHU MANUFACTURER.
9 –PROVIDE NEW POWER WIRING FOR EACH NEW AHU EMS CONTROL PANEL (TOTAL OF 3). COORDINATE FINAL EMS PANEL LOCATION IN FIELD WITH TCC. EXTEND POWER WIRING AND CONDUIT FROM PREVIOUS EMS PANEL LOCATION TO NEW PANEL LOCATION.
10 –CONNECT TO EXISTING SPARE 20 AMP (120/1/60) BREAKER IN EXISTING PANEL "LM". EXTEND 2–#12, 1–#12 GROUND IN 3/4"C. TO NEW DUPLEX OUTLETS FOR IONIZATION DEVICES (COORDINATE FINAL LOCATIONS WITH OWNER IN FIELD).
11 –DUCT MOUNTED IONIZATION DEVICE (FURNISHED AND INSTALLED BY MECHANICAL CONTRACTOR).
12 –NEW ELECTRICAL DUPLEX OUTLET FOR IONIZATION DEVICES (COORDINATE FINAL LOCATION IN FIELD WITH OWNER).



ELECTRICAL POWER PLAN 0' 4'

GENERAL NOTES

NO:	REVISIONS:	DATE:

DUPRE LIBRARY - ROOM 146
AIR HANDLING UNIT REPLACEMENT

UL PHYSICAL PLANT
THE UNIVERSITY OF LOUISIANA AT LAFAYETTE
P.O. BOX 43210
LAFAYETTE, LOUISIANA 70504

UL
UNIVERSITY OF LOUISIANA AT LAFAYETTE
PHYSICAL PLANT
FILE:
04857(DUPRE LIBRARY)(MAPS)

PROJECT NO:	SHEET:
DATE: APRIL–2020	E1
SCALE: NO SCALE	